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ARTICLE I.

THE DENTIST: HIS RELATIONS TO HIS PATIENTS AND TO HIS BROTHER PRACTITIONERS.

BY DR. C. S. LANE, OAKLAND, CAL.

Abstract of paper read before Oakland Dental Club.

I have always been inclined to think that generally a lawyer in his zeal for his client, or to carry a point in law, forgets for the time being, at least, that he is both a *man* and a *citizen*, and that he owes something higher both to himself and to his neighbor.

I hold that it is greater and more noble to be a *man* than a genius; the more of a man the higher the possibilty of his professional genius.

Then it follows that the better a man is the better a dentist he may be. The essentials are honesty, integrity, industry, carefulness and cleanliness. His family name, his social distinctions, his early educational opportunities all may help him, but none will take the place of honest, earnest effort, every day, everywhere and in every particular.

It does not follow that a man in order to be a good dentist should neglect his duty to his country or the political or social life around him, and especially to his own family. He may discharge all these duties and obligations well and faithfully and be all the more a conscientious dentist for having done so. Generous, honest-hearted, earnest men are the best anywhere; the dentist is no exception. It does not follow that a dentist should always be solemn and severe, for the longer we live the more we should admire the pleasant and cheerful side of life. Men work longer in life's work and are more agreeable to their patrons, their families and themselves by maintaining a cheerful heart and a bright eye.

The dentist in this age of the world must be a student of whatever pertains directly to his calling, whether it be the text-books or the journals giving the thoughts and modes of others, whether in college chairs or in the busy ranks of practice; and he cannot without loss to himself neglect the association with others of his work, both professionally and socially. The dentist should know himself; he should set a high standard, physically, scientifically and morally, and strive to live up to it. His office and instruments, his person and his morals must be clean.

I owe it to myself and my patrons that my rooms should be attractive, neat and well-ventilated; that my instruments shall be clean—and that means not only presentable, but sterilized, so as to be perfectly safe to use in any other mouth; and that my presence be agreeable; that no wretchedly foul catarrhal odor from the breath shall be thrown into the face of the patient; in fact, I believe if a dentist has a nasal or pharyngeal catarrh which cannot be so far ameliorated that his breath shall not be tainted thereby, he should abandon his chair-work. The body should be well bathed, the nails and hands kept perfectly clean, and no hint of tobacco or whiskey should be found on the breath or clothing.

Dentists too frequently acquire indolent habits; office life is dull and prosy. Better shorten hours of business and take air and exercise for the recuperation of bodily and mental vigor. Interest yourself in something outside your office routine, that will not altogether divert attention and effort from the life-work, but which will more fully fit the body and mind to successfully cope with the duties of your profession.

The same law that requires us to be true to ourselves requires us to be true to our patients, as worth and nobility of character always react, enriching others as well as the possessor; hence, if we are what we ought to be, and what we may be *in ourselves*, we are so much the more to our patrons. For it cannot be too strongly emphasized that we must first of all have our own respect and consciousness of worth if we would win the respect and confidence of our patients. We may not be brilliant or win glory of men, but our own respect is worth more to us than all the flattering eulogies that men can receive who at the same time in their own breast have a conviction that they are hollow, craven and dishonest.

The dentist is a servant. The term may be distasteful to some; but he who is above service for his fellow-man is below the stature of manhood; to serve our race well is the highest honor to be coveted by mankind. Therefore in our dealings with our patients, let our first idea be that of the highest and best service; and here we are master as well as servant, for we should not only serve, but we should know what kind of service will best meet the case, and be prepared to render that service regardless of the ignorant or mistaken notions of our patients. I am only sorry for the man who will sacrifice a valuable organ to gratify an ignorant and impulsive sufferer for fear he will let slip a paltry dollar, which may possibly drop into the pocket of some unscrupulous knight of the forceps. Better a thousand times say "No!"

The struggle for gain enters so largely into all our work that many, if not all, of the nobler, more kindly virtues are suppressed as only fit to be exercised by philanthropists or religious cranks. The professions have tried by their ethical teachings to sterilize their ranks of much of its foulness, but the imagined needs of man are such that to possess them he turns a deaf ear to fraternal feeling.

An important question in our fees is: Shall we have a uniform fee for our time or for the operations involving ordinarily a certain amount of time and skill?

The dentist is often called upon to serve without remuneration; when this is the case, he should render that service with all tenderness and thoroughness, and take his reward in the consciousness of having benefited a fellow-being. However, the cheap-John quacking individual who fixes a twenty-five or fifty cent rate for extracting, and a dollar for fillings, and perhaps nothing at all for treating, with plates from five to ten dollars each, is simply degrading a noble profession. There are many people who are indiscriminating and simple enough to think that a filling is a filling, whether it costs one dollar or ten dollars. So long as they are relieved of present suffering, they make little account for the future consequences.

Not many weeks ago a patient came to me with neuralgia, which had continuously destroyed her rest for nearly three weeks previously. She had all this time been under the care of one of those kind of dentists, had a number of fillings inserted, such as they were, and one good tooth extracted from the left side of the mouth, hoping thereby to relieve the pain in the nerves of the face on the right side. How is that for science? I found an exposed and badly inflamed pulp in a bicuspid on the right side, each side of which the operator had inserted fillings, carefully avoiding this tooth, telling the patient it was a dead tooth. I saved the tooth and made it useful, but sacrificed the pulp.

Now, I maintain, such conduct and such dentists fail so far of coming up to the standard in themselves and towards their patients and the profession that they are simply parasites which we should brush off if we possibly can. The general good demands that such disgraceful conduct should be punished.

It is a notable fact that every cause and enterprise of the present day can only prosper and be successful by union and consolidation; single-handed enterprises are, as a rule, a failure. As I understand it, we are now building up a distinct profession which is young, vigorous and progressive, though not yet perfectly understood and appreciated by the public. We are bound to organize and unite our sympathies and energies to uphold and advance dental science, even if it should cost us a little personal sacrifice.—*Pacific Coast Dentist.*

ARTICLE II.

DENTISTRY AND GENERAL MEDICINE.

GEORGE H. CHANCE, D. D. S., OF PORTLAND, OREGON.

However much American dentists may differ concerning the practice of dentistry and its relation to general medicine, medical men, with few exceptions, believe dentistry is a mechanical art only, and that dentists are mechanical craftmen, and as such are not entitled to professional recognition from medical men. It will, therefore, be the purpose of this paper to show, if possible, that whatever may have been the dentistry of the past, the dentistry of the present is both a science and an art, as well as a liberal profession.

Modern dentistry is, in the broadest sense, both a science and an art. As a science, it deals with a full and an accurate knowledge of the dental organs and their functions, as well as with a knowledge of the causes leading to their pathological conditions whereby disease is engendered, and function either impaired or destroyed.

As an art, its votaries are instructed in and made acquainted with the various methods and means for combating dental and oral disease, that health may return and, wherever possible, function restored; so that it is quite safe to say that dentistry is science applied to dental and oral surgery. And it is quite as safe to say that medicine, when stripped of its scientific adjuncts, major and minor surgery, is largely a system of guessing at probabilities in disease, with a fearful lack of harmony existing among the guessers, divided as they are into belligerent camps, some large and "regular," and some large and "irregular," besides other small camps of various construction, with guessing schools attached to each camp, teaching different theories, and each claiming to teach the only true Simon-pure method of guessing and of practice. And these, forsooth, are they who assume to write and publish their guessing criticisms on the dentist and his methods; one of these from the large and "regular" camp gravely guesses that dentists are not sufficiently sterilized to prevent infection from syphilitic patients when they apply to the dentist for treatment of the oral cavity.

Then there is the brother from the "irregular" camp of guessers, and he guesses that dentists ought not, under any circumstances, use amalgam for filling cavities in defective teeth, because he guesses that the potency of the dynamic force of his fifteenth dilution of medicinal dynamo will be destroyed by coming in contact with the wandering mercurial spooks, which he guesses may inadvertently escape from between the meshes of the amalgam plugs. But surely we are not as ignorant as some of these guessers take us to be, and really do know more about some things than they give us credit for.

Dentistry has discovered the cause, and is daily successfully treating 90 per cent. of all the cases of so-called "facial neuralgia," whose victims apply to the dentist for relief. It has also vastly improved on the methods formerly in vogue by the medical profession for the surgical treatment of tumors of the oral cavity, as well as fractures of the jaws, simple or compound. It has aided and abetted the aurist and oculist in their efforts to restore function. It was a dentist who first thought out and who first put to practical use that boon of boons, anæsthesia, and who gave his thoughts and his experience to the medical profession and to the world without fee or reward. What has here been stated as standing to the credit of dentistry is but a tithe of what it has accomplished, and is destined to yet accomplish in the interest of suffering humanity, in spite of adverse medical criticism.

The "medicine man," whose office was in former ages merged with that of the priest and prophet, and who also was thought by many to be gifted with supernatural powers in the art of healing the sick, has from time immemorial exerted a seeming mysterious influence over the minds of the common people, sometimes for good, and sometimes for evil; and this seemingly strange influence exists in the minds of the laity to day; hence, the physician's opinion, when he is called to the sick-room, is deferred to in all cases almost without question; and to a certain extent this is right, for such confidence enables the conscientious, competent physician to treat the patient according to the exigency of the case, free from the ignorant interferences of anxious friends. Besides this, very few of the laity possess any genuine knowledge of the *mysteries of medicine*, so that there are obvious reasons for this sometimes "blind faith" in the chosen physician, no matter from what school he may come.

Such things show us how very differently the physician and the dentist are held in public estimation; the services of the former being sought mainly for his supposed skill in the mysteries of medicine, while the latter is employed not so much for his technical knowledge, which, of course, he must possess, as for the special labor he is expected to perform; so that to succeed in our calling it is not necessary that we should wear the badge of medical servitude, for dentistry is the product of a higher and more advanced form of civilization—a scientific, independent profession, developed by master minds of a more recent generation, and not a *medical legacy* left us from a former period, when the medicine man was the only source to whom suffering humanity was taught to look for physical relief, and whose application was in vain when the malady was of dental origin.

Dentistry, like general medicine, is here to stay; both are needed, and both are without doubt intended as instruments in the hands of the properly educated for the relief of physical suffering; and so far as scientifically educated, limited human foresight can go, are also intended to be used for the *prevention of disease*; but such desired results can be reached in certain cases only in proportion as physician and dentist are willing to consult and co-operate with each other; and to do this intelligently and successfully each must possess that kind of an education which will not only fit him for practice in his own field, but must, to a considerable extent, overlap other branches of the healing art. While it may not take in all details, neither does such an education imply that a dentist shall practice general medicine, or the physician dental surgery.

This is precisely the kind of education the dental students acquire in the dental colleges of to-day; three full years of study and attendance on three full courses of lectures being required before the student can be graduated. It will be noticed that the time required to be graduated in dentistry is the same as that required for graduation in general medicine. It will therefore appear to the observant mind, that if it takes three years to graduate a student in dentistry, and no more than three years to graduate a student in general medicine, that there must be something more to learn in dentistry than the average physician, with his present limited knowledge of the dental organs, is prepared to admit. The medical man should, if only for his own reputation, be better informed on the subject of the teeth than is the average physician of to-day, the teaching of which has been sadly neglected in the medical colleges. —*Items of Interest.*

ARTICLE III.

THE HORACE WELLS PERMANENT MEMORIAL.

UNDER THE AUSPICES OF THE AMERICAN DENTAL ASSOCIATION.

To the Dental Profession of America:

The Central Executive Committee appointed by the president of the American Dental Association is as follows: Dr. James Truman, Dr. Wilbur F. Litch, Dr. S. H. Guilford, Dr. E. C. Kirk, Dr. J. D. Thomas, chairman and treasurer.

This committee has been completed in its organization by including in its membership the presidents of all dental societies throughout the United States.

It is hoped to secure enough money to erect a bronze statue of Horace Wells in the national capital. The details as to style and character of the statue, as well as its definite location, will be decided upon at the next meeting of the American Dental Association, to be held at Asbury Park, N. J.

The committee takes pleasure in calling your attention to this opportunity for doing an act of justice to the memory of a worthy member of our profession, whose discovery has been of such incalculable benefit to humanity, and which has been so great an honor to the profession. You are invited to contribute whatever amount of money you may feel able and willing to donate to the fund, and to use your influence toward bringing our plan to a successful issue in a manner befitting the object.

Contributions may be sent by any member of the profession through the president of his local society, or direct to the treasurer, Dr. J. D. Thomas, 912 Walnut street, Philadelphia. An official receipt will be issued by the treasurer for all contributions. The full list of contributors will be embodied in the pedestal of the memorial.

J. D. THOMAS,
Chairman of the Central Executive Committee.

The Executive Committee requests that all who desire copies of the souvenir volume of the meeting held at Philadelphia December 11, 1894, in celebration of the fiftieth anniversary of the discovery of anesthesia by Horace Wells, will promptly forward their names to the chairman, in order that the number of copies to be printed may be determined upon. The price has been fixed at $1.50 per volume, postage free to all parts of the United States; foreign countries at regular postal rates.

ARTICLE IV.

PREVENTIVE DENTISTRY.

BY I. P. WILSON, D. D. S., BURLINGTON, IOWA.

That very many of the operations performed in a dental practice could have been avoided, had the teeth been properly cared for, there can be no doubt.

The masses of people do not understand the importance of hygienic dentistry. Many, who observe the most scrupulous care as to personal cleanliness, and are even fastidious as to what they will eat and wear, and religiously guard every avenue of approach for disease that surrounds their homes or their places of business, yet they tolerate offensive roots or stumps of teeth in their gums, with tartar and decomposed food upon their teeth. These impurities vitiate the air that they breathe and poison the food that they eat in the first process of digestion, and thereby render impure the blood which must supply the continued demand made upon it for reparative material.

The masses of people need to be educated regarding this all important matter. Who shall be the teachers? Were it not that parents, as a rule, are ignorant of the consequences of the neglect referred to above, we might excuse ourselves, and leave the rising generation in the hands of fathers and mothers. But we cannot, as a profession, afford to do this.

In the first place a dentist should set an example of cleanliness. His teeth should be scrupulously clean, and his breath pure. He should not hesitate to speak frankly and freely to his patients regarding a personal matter that has so much to do with health, not only of the dental organs, but of the entire organism. Sensible people will appreciate such advice and instructions, while others who are more thoughtless, I had better said more senseless, will perhaps manifest indifference, and they may give you to understand that they do not appreciate any gratuitous advice, as they may deem it, pertaining to their personal habits.

The physician or the dentist who will stand by and see his patient's health, if not his life threatened with danger, and not fearlessly sound the alarm, is not worthy of his high calling.

Not only do the interests of our patients demand instruction at our hands, but our personal interests demand it.

It is the privilege of every dental practitioner to build up a clean, desirable practice that will not give him discomfort, nor endanger his health. Let me emphasize more fully what I would say with an illustration:

Mrs. A. requests you to kill the nerve, treat and fill an aching tooth. On examination you find her teeth coated with tartar and decomposed food. You find some dead useless roots or stumps of teeth in her mouth, you also find that a number of her teeth are decayed and need filling, and, as a matter of course, you find Mrs. A. with an exceedingly unpleasant breath, and by no means a desirable patient upon whom to operate. You very properly suggest that a general renovation is necessary; that after an application has been made to devitalize the pulp, and relieve her of pain, that her teeth must next be cleansed, and then *kept* clean. The necrosed roots must be extracted, and the decayed teeth filled.

If this course of treatment is objected to by the patient, freedom from pain being the only object sought, I should promptly decline treating and filling said tooth, having too much respect for my olfactory nerves, as well as my precious health to voluntarily place myself under such contaminating influences.

It seems to me that in such cases our duty is plain. We cannot afford to jeopardize our own health, nor is it right that we should encourage human beings in totally disregarding hygienic laws. This may seem like heroic treatment, but nothing else will sufficiently arouse some people, and awaken their self-respect and pride, so as to stimulate them to action.

But I wish now to call attention to the thought that was first in my mind when I sat down to write this short paper.

It is a well known fact that, as a rule, the teeth of boys and girls decay more readily during their teens than in subsequent years. The reason is obvious, and need not be dwelt upon here. The preventive treatment I have to recommend is simple and effective, especially in the bicuspid and molar teeth. When these teeth first emerge from the gums, the enamel fissures are open, and a fine pointed excavator can readily be forced down into the immature dentine.

The imperfectly developed enamel in these fissures is sometimes mistaken for caries, and is treated accordingly.

Instead of attempting excavation in such cases, let the fissures be thoroughly syringed out with warm water, then dehydrate with alcohol, dry thoroughly, and fill with cement. Then place a little of the dry powder over the filling and press it firmly with the finger, forcing the cement into the remotest recesses of the fissures, and excluding the moisture, if necessary, with the finger still upon the filling, and holding it there until crystallization has taken place. Then dress off the surplus, and in nine cases out of ten decay has been prevented, and without causing any pain from excavation.

But if decay has been prevented for only a few months or years, and the same treatment is then repeated, and the tooth is preserved through those early years of immaturity, and is afterward filled with gold, more of the tooth structure has been preserved, its natural color retained, and much less pain has been inflicted.

I need not enumerate the different conditions of the teeth, particularly in youth, and in pregnant and nursing women where cement may be used to great advantage in preventing decay.

Preventive dentistry should be practiced more by the profession than it is, and our patients will not be slow to appreciate our efforts, and remunerate us more willingly for preventive treatment, than for more taxing services.—*Dental Digest.*

ARTICLE V.

A FEW MORE WORDS ON PYORRHŒA.

BY DR. A. V. ELLIOTT, FLORENCE, ITALY.

In presenting this subject of Pyorrhœa Alveolaris, I wish to say at the outset that I am making no claim to original research, I have not gone into the etiology of the subject, nor into the close scientific hair-splitting questions which are all current to-day in regard to this puzzling and perverse disease. I have left this to men better qualified and equipped for such work, whose tastes, talents and enthusiasm give them a loving and caressing fondness for the habits and social life of the little microbe, who, as the poet has said, "Gets there all the same."

But without having gone into the deepest depths of the study of the pathology of the disease, I have had, in common with each of you, a good deal of practical experience with it,—enough to prove to me that there can be no hard and fast rule to apply to it. Usually when a case is presented to our notice the tooth has changed its position a little and is found to be more or less loose and sometimes elongated. The gum about the tooth is congested and unhealthy looking, and on taking a probe to explore it is found that more or less separation of the tooth from its attachment has taken place—usually more on one side than on the other—and that the process to greater or less degree is absent. Neuralgic pains are often associated with this condition of things—especially towards the latter stages—arising, no doubt, from the nerves in the roots having lost, through the progress of the disease, the natural protection of the gum and process—the root itself not being sufficient to protect the nerve from unusual thermal shock.

I deem it unnecessary in the presence of this audience to describe further this disease. What we want to know as practicing dentists is what is it, what is the cause, and how to cure it. Some of the best men in our profession are in open antagonism in regard to its origin, one set holding to the constitutional or systemic, the other to the local and limited. The constitutionalists agree that the disease, as we find it in the mouth, is but the expression of some fault or vice in the blood such as uric acid, scurvy, struma, etc. The uric acid or gout theory is very plausible in spite of the fact that for many years gout has been made the scapegoat of obscure diseases in general, and has been generally used as a convenience to cover up ignorance on the part of the diagnosticians.

In justice to Prof. Pierce, however, in this connection we must admit that his conclusions have been arrived at after a careful and scientific examination of the subject, and deserves our serious attention. It may be, and very probably is, the case that vitiated blood has more or less to do with the disease—whether primarily or secondarily is the question,—whether or not the disease has its origin in the blood. We, as dentists, have to devote our principal energies to the local conditions. They require the most careful attention, both mechanical and chemical, to insure any promise of amelioration.

What makes the disease so perplexing is the apparent perverseness of it—so contradictory. The "Eureka" of yesterday gives place to the discouragement of to-day. Rheumatic and non-rheumatic, gouty and non-gouty, strong and healthy, weak and anemic,—the only exception to this omnibus of conditions is age, we do not often find it in the young. Before Riggs' time there was not that close study into the pathology of the human jaw, we are favored with in these days of dental conventions. Our occupation was then more mechanical than professional and some even now, I am sorry to say, seem to consider it so.

It is easy to call the attention to the fact that the ancient and primitive men had perfect teeth, and so all things considered they should have had, but what proof have we of the fact. As far as my observation has taught me there seems not to be so much difference as the changed conditions of living would warrant. I have studied the jaws of the ancient Egyptians at the museums in Cairo, the lake dwellers here in Switzerland, the ancient Romans at Pompeii, and in the Catecombs; the ancient Britons, the mound dwellers at Harvard University, the Etruscans in Italy; and but recently had the pleasure of seeing, through the courtesy and guidance of my friend Dr. Dunn, of Florence, a skull whose age it is impossible to estimate. It was so well preserved by the process of petrification that on removing a portion of that which was formerly the skull, the petrified dura mater showing the convolutions of the brain and the superficial blood vessels were still to be seen.

Yet this most ancient of earth's inhabitants evidently suffered from tooth-ache, evidenced by two badly decayed teeth and a root. This interesting skull is in the museum of San Gimignano, a walled and medieval city, situated among the mountains of Central Italy. It was found several meters under the surface, in a strata of the teretary period associated with the disintegrated rock, fish shells, rubble, etc., the whole of which, although now over 1,000 meters above the sea level, was once under water and that for unknown ages.

Of the great number of ancient skulls which I have had the opportunity of examining I have invariably found a certain percentage among them bearing evidence of decay of the teeth, thus proving our remote ancestors were not so very different from ourselves as regards immunity from diseases of the masticating organs. If we go still further back past the missing link, which at present divides us from the brute creation, we find that the gorilla and chimpanzee—our nearest relations the other side of that link—are better off than ourselves in this respect. So are these animals as we find them now. The gorilla has a magnificent set of teeth, including powerful cuspids and third molars.

One would suppose that in those earlier times referred to, when a less complicated civilization existed to weaken men, and especially when the survival of the fittest was in vogue—the weaklings having gone to the wall in early life,—that decay of the teeth would be almost impossible and the same in regard to the disease we are now considering. I am sorry not to be able to indicate definitely the ancient skulls which I have seen showing unmistakable evidence of the ravages of this disease.

In examining these ancient skulls referred to, I was then interested in the question of caries and alveolar abscess and neglected other matters. But in thus referring in general terms to decay of the teeth I wish to assume by analogy other lesions relating to the masticating organs as well, so as to emphasize the immutable law in Nature, namely, *a given set of conditions invariably produce a given result.* Everything in nature is but a problem in chemistry or mathematics. If we knew all the figures of the proposition or the chemicals in the compound and had the ability we could solve the problem, or by qualitative and quantitative analysis get at the result. But in this, like other problems in nature, we need more data before we can arrive at the truth. A solution will come in good time. I have faith in the Millers and Huxleys of the future as well as in those of the present day.

In my opinion pyorrhœa alveolaris is but the result of a tendency in the original constitution acted upon and developed by favorable conditions. I have had this truth strongly impressed upon me by observing the relative difference there exists between people of the same race and condition in life, but living differently. Take for example, the Italian peasants. Those of the country whose diet is simple, consisting of polenta and hard black bread with hardly any meat and no condiments, have good and strong teeth and healthy gums, while their relatives, those of the cities, many of them originally from the country, living under different sanitary and dietary conditions have usually disgusting mouths. Theirs is a mixed diet of poor quality, including in it all the extras they can afford. But even among those, all are not equally affected. Some have moderately clean mouths.

I think we will always find that those races which are blessed with good teeth and healthy gums live on a simple and natural diet. Even our Irish when they first land at Castle Garden, before they become the aldermen and mayors of our cities, have generally good white teeth. Their diet at home was simple enough, consisting mostly of potatoes and milk—and good fighters they are, too. The

Arabs have also very good teeth. Their diet is likewise very simple.

I was recently told by a gentleman fresh from among the blacks of South Africa that the Zulu Kafirs there, the natives of the place, have in their native state strong and sound teeth, but that those who are brought into contact with the white man and his civilization are much worse off, and frequently resort to the white chemist and his forceps for relief.

There are two great principles we must recognize as potentialities in regard to the teeth and their environment,—the way people live and the care they bestow on their teeth. A bad way of living induces bad blood and impure secretions. This idea favors the constitutional side of the question, but it is true, nevertheless. Rich people and those most favored, to outward appearance, often do violence to nature both as to quality and quantity in what they eat. Nature will not suffer violence without revenging herself sooner or later.

A favoring condition in those predisposed is the neglect to give the teeth the exercise they require. Some teeth need more exercise than others. It would seem as if in the combination of teeth and jaw strong teeth were often placed in jaws too delicate for their proper support. The teeth are all right, but the jaw is deficient. What is needed in such cases is to brace up the jaw by giving it plenty of exercise—gymnastics and massage. It is said our forefathers had larger jaws than we have. They probably ate tougher steak and had less delicate French cooking.

Even dogs, if fed on soft and rich food without the opportunity of exercising their teeth, tearing the meat from the bone, etc., will suffer in time with the ills the superior animal, man, has, generally speaking, the monopoly of.

It is a well known fact in medicinal science that the non-use of an organ weakens it and that giving it proper exercise strengthens it. An arm done up in a sling soon shrinks away and an arm at the blacksmith's anvil will develop great power. With myself I sometimes notice a tenderness in certain teeth when commencing to masticate with them after having given them a holiday for some time by chewing on the other side, Whenever I discover the tenderness I take the hint and work that side for all it is worth until the tenderness disappears. You know it is a common habit with us to use one arm more than the other—some people are almost blind in one eye without knowing it—from not using it.

Another factor in encouraging this disease is improper cleaning of the teeth and gums. A perfunctory, careless, and slovenly method is almost as bad as total neglect. The gums about the neck of the teeth should have a thorough massage with the tooth brush. The ideal mouth. judging from an extended experience, is that of the average American young lady. In her mouth, the gums are firm and healthy, the teeth free from tartar and the breath sweet. She owes it all to her innate sense of refinement and her tooth brush. She may be a tooth brush crank but it pays her.

In regard to the treatment of and prognosis there are many cases presenting themselves which are hopeless—too far gone to attempt anything but alteration and with most of those the best remedy is the forceps.

There are others whose general appearance discourages any prolonged effort.

There are patients who never have the desire or patience to give the time demanded. After eliminating those we have a great variety to try our luck upon, from the doubtful to the hopeful, according to the stage of the disease and the patient's powers of co-operation.

The first and most important essential is scaling to remove all foreign adhesions, then a thorough washing out of the pockets and around the roots with peroxide of hydrogen—sometimes adding a little of the 1,000 solution of the bichloride of mercury. After a little rest and rinsing out the mouth, the next application should be of the nature of a stimulant and I know of nothing better than a one in 10 solution of sulphuric acid with a few drops of the tincture of iodine added. This can be injected into the pocket or pockets under the free margin of the gums with a Donaldson bristle having a few shreds of cotton wrapped about it. This treatment might be changed sometimes and Robinson's remedy or something else substituted. The patient on leaving after the first visit should be instructed in the manner of using his brush, and as to the kind of brush. A prescription for a disinfecting mouth wash should be given him. The one I would give is Prof. Millar's saccharin mixture, which should be used diluted. A formula for a simple and medicated tooth powder should also be given, such as prepared chalk, orris root and chlorate of potash in equal parts. Besides which he must be instructed to rub the gums about the roots with the fingers, especially up and down, a sort of massage exercise strengthening the gums and tending to press out foreign matter from the pockets. And finally he should be encouraged to exercise the loose teeth as much as possible by chewing on them freely and persistently. Let him chew gum or anything else except tobacco, in which case the remedy would be worse than the disease. Like one's experience in gymnastics—at first the muscles are tender and easily fatigued, after awhile the exercise is a pleasure.

On my way here yesterday I passed a stone quarry. The size of the mallets used by the workmen were enormous—half an hour's work with one of them would use me up for a day.

In regard to the constitutional treatment my advice is to refer the client to the family physician. Proper treatment of the disease requires much co-operation from the patient.—*Proceedings of American Dental Society of Europe.*

ARTICLE VI.

OXYPHOSPHATE OF ZINC AS A FILLING MATERIAL.—ITS ABUSE.

BY J. E. WILKINSON, D. D. S.

Read before the Dental Association of Nova Scotia.

Zinc oxyphosphate, commonly called cement, bone-filling, white filling or composition, has become an essential in operative dentistry. Among its more important uses may be mentioned (1) that of a temporary stopping in young anterior teeth; (2) in deep-seated cavities where pulps are almost exposed (in time often permitting deposits of secondary dentine); (3) in the treatment of nerve-canals to retain the temporary dressing and fill the cavity until considered ready for the permanent filling; (4) as a trial filling over a capping in exposed pulps, and (5) in cases of recent pulpits; (6) as an intermediate in deep cavities under gold or amalgam, both preventing thermal shocks and strengthening frail walls; (7) for inserting crowns and bridges.

Judiciously selected and properly manipulated, in the cases above mentioned, and other conditions and capacities, oxyphosphate has proved to be a great blessing to patients and satisfaction to dentists; but unfortunately, like many other beneficial materials, it has been very sadly misused and abused.

The most common abuse is in being employed as an ordinary filling material in ordinary cases. Its solubility in the fluids of the mouth, the especial tendency to this, in many cases, at the cervical margin and on palatine surfaces, and the consequent uncertainty of its efficient durability, will not allow it a place as a permanent filling. Its use is perhaps most common with foreign dentists having foreign patients, and with itinerant practitioners, the selection appearing to be made owing to the readiness with which the cavity can be prepared and the filling inserted, at the same time commanding a very fair fee, also the unlikelihood of ever seeing the patient again. In some mouths cement will completely dissolve out in about six months, while in others it will continue in good preservation for as many years. Again, in some cases, while the lower part and body of the filling remain intact, the part just under the gum margin has completely dissolved out, forming a most favorable habitat for a colony of microbes which steadily advance in their operations until often the nerve-pulp chamber is penetrated, when an attack of acute pulpitis, or perhaps periostitis, sends the patient to the nearest dentist to find out why a tooth which was filled should ache. Henceforward his or her confidence in dentists is much weakened and accompanied with a constant suspicion. Last fall a lady, the wife of a sea-captain, just before starting on a voyage, had an upper molar extracted. A cavity on the posterior surface had been filled in Calcutta by an American dentist. Fee, four dollars. She wished a filling that would stand, and save the tooth. The material used was cement, which was completely dissolved away at the gingival margin. The nerve was exposed and partly dead, so that under the circumstances the loss of the tooth was necessary.

Many operators neglect to inform their patients that cement is but temporary, and may last only six months. On the other hand, patients who have been warned, very often wilfully neglect obtaining the required attention. How often have we all had patients come to us, especially from the country, with teeth of fairly good quality, but suffering from neglect, who, upon being advised to have them filled, state their intention of letting them go and getting plates some day, because fillings were not of any use, for they had several filled a year or so ago and they all came out, or So-and-So paid $10 or $20 a few years ago for fillings and is now wearing "false teeth." Upon inquiry, we have generally found these to have been the white fillings, and remark that they are only temporary and dissolve out, to which the reply often is, "Yes, that's the way they did, but the dentist didn't tell us that." In this manner good teeth are sacrificed, and the profession in general is injured.

A second abuse of oxyphosphate is in its manipulation, both in mixing and its insertion. By adding too much powder to the fluid at once its quality is lowered. If too stiff when applied to the cavity, it cannot be perfectly adapted, and the filling is granular, rough and defective. If too thin and soft when applied, it is not desirably tough, but crystalline and brittle. Applying to moist cavities, puncturing with small-pointed instruments when nearly hard, and imperfect preparation of cavities, may be mentioned as injurious.

Oxyphosphate is irritating to a pulp partially or almost exposed and its employment as a direct capping is therefore an abuse.

The last abuse of cement to be considered now, is its non-use, referring chiefly to its capacity as an intermediate, in deep-seated cavities, either over a capping where the nerve pulp is partially exposed, or directly applied where the cavity is merely large and deep, for the purpose in either case of lessening thermal shocks, and, perhaps, of strengthening frail walls. How often have all dentists been applied to for relief, by patients suffering from acute periostitis, caused by dead pulps destroyed by irritation caused by large metal fillings where the insertion of non-conducting intermediates might have prevented the trouble. Not only so, but have we not had even to remove metal fillings actually penetrating the nerve-canals?

In speaking of the non-use of cement, we may allude to neglect of young permanent teeth, badly decayed and of very poor quality. A girl of thirteen, whose every tooth, above and below, was decayed, said that she had been taken to a dentist two years before and was told by him that there was no use in filling her teeth. In such a case we know that, if at all possible, the teeth should be preserved until about the age of twenty-one years, when alveolar ridges will be harder and not subject to so marked absorption which is the cause of so great permanent injury, rendering the retention of artificial dentures more difficult, and permanent disfigurement of features. For anterior teeth and often the posterior as well, the material indicated is cement, which should be replaced as often as necessary.—*Dominion Dental Journal.*

ARTICLE VII.

EXTRACTS FROM ESSAYS ON CHINESE DENTISTRY.

BY A. M. H. (COMMUNICATED THROUGH C. ROBBING, L. D. S., ENG.)

Written by young Chinese students who are learning English at the Anglo-Chinese College, Foochow, China.

In China dentistry is not widely practiced, as the dentists not only are unable to supply the lost teeth but also they are not able to arrest the decay of the teeth, therefore I have only concentrated two themes in my mind upon which I will write, viz., the extraction of the teeth and the pretense of catching the tooth worms. Once upon a time on my way to school, while passing the Ming bridge, I chanced to see a personage submitting to an operation of a native dentist, as he had undergone pain in one of his molars for some time. My attention being attracted I took my stand by them to watch narrowly what was going on. The dentist dipped some soft pink substance on his instrument, which was somewhat like a knitting pin, but instead of having pointed ends had blunted ones, and he applied it to the base of his patient's diseased molar. During the meanwhile he put an end to his talk by saying: "Ha! beware! keep your tongue still, lest it will touch the medicine and be injured." In another moment he extracted the diseased molar by means of his forceps, with perfect ease. His patient then gargled his mouth with water in order to prevent the gushing of the blood, and the operation was completed. After all was over, I took my departure and resumed my journey to school with great satisfaction. On inquiry, I found out that the drug which the dentist employed is generally and properly known by the name "Lu sauk-dang" (arsenic,) "the drug of severing bones." Some is white. According to my opinion the difference of its colors is due to the variety of the coloring matter stirred and mixed in the mixture.

The prescription of the medicine necessary in making it and the method of mixing it are hidden in the pith of the minds of the selfish dentists, each of whom has the lot, marked out by his birth, of being secretly communicated by their forefathers with them.

On this account everyone of the personages of whom I have diligently enquired as to how it is composed, and how it is made, alleges that he has not the least idea. Now, I want to state another case; I recollect when I was a stripling being a spectator of a ridiculous dental operation performed by a menial surgeon. His life was that of an itinerant. Generally he made his choice of the open space in front of some club elaborately sculptured, or in the vicinity of some highway, to set out varieties of drugs and ointments, highly burnished knives and crockery, such as canisters, mugs, etc., together with lamps all mingled higgledy-piggledy, pretty much as I have enumerated them. No sooner he struck his gong to attract a crowd than people came flocking to him, and children, as a matter of course, would elbow their way through the throng towards him. After all he offered to extract a tooth free of charge for anyone who would submit to his first operation. A boy of a dozen years old, who was neither well bred nor well-to-do, took advantage of his offer, and stepped forward to have his shaken tooth extracted. Then the surgeon dipped a piece of paper in a mug of Lu-sank-dang (arsenic) and brought it in contact with the tooth. At the same time he enjoined upon him to close his mouth as tightly as possible, and pasted half a dozen strips of paper at one end on his face, leaving the other ends downward. The boy, thus adorned, was such an apparition as is seldom to be met with in broad daylight. After everything was ready, the surgeon befooled the boy, saying, "You should jump as often as I beat the gong, so that your tooth will be fully influenced to cause to drop down by the drug without slight pain." We undoubtedly know that a boy of a dozen years is generally an odd mixture of ignorance to credulity. On account of this he readily followed his advice and jumped as speedily as he beat his gong. The wide throng of spectators of course burst into a laugh, and meanwhile the tooth fell off.

Now, let me advert to the pretence of arresting the tooth worms. One of my relatives was once attacked by a serious cold, and after the cold was broken up by restoring activity to his skin he had a neuralgia having its origin in one of his molars, which gave him such an intense suffering that he could neither eat nor repose, but moaned with a voice so audible and so plaintive that it sent a thrill to the heart of everyone in the house. At first he endeavored to alleviate his pain by holding the solution of wonghu in his mouth, but without avail. On the second day his suffering increased to a remarkable degree, indeed it is impossible even at this distant period to reflect without horror on the miseries of his toothache state. Then a surgeon stepped in and declared that as the molar was affected by the cold which attacked before it was not tractive and that if extracted there would be no end to the bleeding, so that he went his way.

Finally he submitted to an operation of a woman dentist whose agency was to arrest tooth worms. Her general operation is as follows: A chopstick and a silver pin are the only instruments she requires in her normal act. She is willing to exhibit them to any one who conceives an inclination of discerning her trickery. She brings the chopstick in contact with the diseased tooth, and cautiously pokes it through with the pin in search of the odious worms; after awhile scrapes out a lump of yellow minute worms on the chopstick and immerses it in a cup of water. Each lump consists of from ten to fifteen worms, and sometimes two to three hundred worms are scraped in an immense number of lumps, *if the patient makes an exact bargain at first that the fee should be defrayed according to number of worms scraped.* She declares that each lump of worms abide in the same domicile located in the diseased tooth.

The general fee is four hundred cash (about 1s. 2d.) and only the poor may take advantage of being in penury to pay two hundred cash. With reference to my relative, the treatment relieved pain for a couple of days. After the elapse of that time he was in an intolerable agony again. No relief could be secured save by a fresh resort to that lady's booth and another submission to her operation. His toothache was treated in this way time and again, but was not eradicated. Ultimately the neuralgia of the tissues of his diseased molar was broken by following the medical advice of one of his acquaintances, that diets which were cold in nature were the best remedies of the disease of the kind.

Why is it her treatment can relieve the toothache for sometimes, or even eradicate entirely? It is because, I suppose, that the pricks of the pin have the effect of bringing the poisonous blood out of the diseased tooth.

ANOTHER PAPER.

. . . Very many are cured by these medicines, but forty or fifty per cent. are only cured in one or two years.

There are two remedies required, one of holding the medicine in the mouth, and the other washing. The medicine which the dentists give the patients to hold in the mouth is this: They use pepper, gingers, juice, or the roots of keung (a tree whose flowers bloom and decay in a day) and decoct one of them into a decoction. They are of ferocious property, so that I do not know whether it can heal the sickness or not, but I know that when this medicine is held in the mouth, only a very little while, the mouth will swell up, and moreover patients feel more uneasy. The remedy of washing is the most wonderful of all. How do they wash the patients? They go to the hills to gather the buds of the mulberry plants, and put them in a mortar and pound them very fine, then they strain them through a cloth in order to take away the drugs. Now they put the juice in a basin and then begin to wash the patient's *eyes* with a piece of silk batting. When the juice is filtered they then change for the pure juice again, in the basin, to wash the patient's eyes, and do this twenty or more times. When I saw this I asked: "What do you do that for?" They answered that the germs of the teeth were drawn up to the eyes by the medicine and washed off. Accordingly I made an examination of the juice. Oh! I saw that there were germs moving in the juice which were large as hairs and of a very white color. They washed till I could find no germs in it, then stopped. Then the toothache was caused by the germs. Accordingly if the germs were washed off there should not be any more toothache. Why are the patients only cured in one or two years? Because, no doubt, the germs which they produced are not true germs, I think, but only to cheat for money.

[After mentioning other treatment (and that of using arsenic--Lu-sauk-tang) he says:] The receipt of Lu-sauk-tang is as follows: Burn the bones of the dog or man into ashes, and then mix them with some other stingy medicines and pound them very fine like powder. I am very sorry to say I cannot remember this receipt all right, for I cannot find my receipt.

ANOTHER.

"Teeth are the most important objects in human life." "If any animal has no teeth it will be very difficult to make him a living." "Teeth are very necessary to digestion, and are very important in another way; they aid to give a fine complexion to the personal appearance of anyone."—*Jour. of Brit. Dent. Association.*

ARTICLE VIII.

THE PREPARATION OF ROOTS FOR CROWNING AND GOLD CROWNS.

BY DR. CAMPBELL.

Gentlemen: I must explain why this subject has been brought forward, and also why I am introducing it. The Secretary, after making every effort to secure a paper for our first meeting, could meet with no response, and appealed to the President, my father, for help in his difficulty.

It occurred to him that a discussion on root filling and gold crowns would prove of interest to all, and, although I have nothing new in connection with either of these, yet it seemed to me the subject was in itself so comparatively new that a discussion of the whole process, from the preparation of the root to the completion of the operation, could not fail to be interesting and profitable to us all.

I do not know to what extent the crowning, molar and bicuspid teeth with gold is practised by members of the Society, but I would encourage those who have not done much of this kind of work to adopt it more readily, as I must say I consider this one of the greatest strides yet made in conservative dentistry.

In suitable cases, if the process is carefully gone about, success is almost certain, and many cases of roots, which not so very long ago would have been victims to the forceps, can now be made serviceable for years.

I will give you an idea to what extent we have carried on this practice for the last year, as showing our confidence in this method of practice. During 1893 we put in fifty-five gold crowns, and during the ten months of the present year we have put in seventy-three gold crowns. Of these we know of no failures.

When suggesting this subject to the Secretary, my father had nothing new to offer, but he believed that a conversation on this subject would be almost certain to elicit some valuable suggestions.

I will state first how we proceed with regard to treating devitalized pulps.

Let us take a typical case: A patient comes to us with a molar or bicuspid tooth, which has been filled with a large amalgam filling, and, owing to decay or from other causes, the filling has come out and the walls of the crown of the tooth have crumbled away, so that it would be impossible to insert another amalgam filling. Very likely the pulp has been inflamed, and is causing considerable pain. Of course, in such a case, the first thing to do is to apply arsenic, which I invariably use in the form supplied by the S. S. White Co., and described by them as the "devitalizing fibre." It contains arsenious acid, creosote, tannic acid, and morphia, incorporated in fibre, and we find it the most suitable form of using the drug. After drying the cavity a small shred is laid on the dentine nearest the pulp, and a sufficient quantity of thoroughly mixed oxyphosphate of zinc (about the consistency of cream) laid over the whole surface of the tooth. After forty-eight hours this filling can be removed, and if the pulp is sufficiently destroyed it can be removed at once and the root filled.

Generally, however, I find it better to remove the dentine over the pulp and apply a small dressing of mixture of tannin and glycerine in the pulp chamber, and again seal with oxyphosphate of zinc or gutta-percha.

A week afterwards the pulp can be extracted with less pain, and much more easily, as it generally comes away *en masse*.

In the case, however, of a pulp, which has been devitalized from natural causes (such as exposure, owing to carious dentine, etc.), and become septic, one must proceed in a very different manner.

We have tried several methods, but the one with which we have had best results is the process described by Dr. Emil Schreier, of Vienna, at the World's Columbian Dental Congress, held in Chicago last year, in his paper on the Dalium Natrium process. This consists as, of course, you all know, in taking a small quantity of a prepared mixture of sodium-patassium properly on a barbed broach and applying it into the centre of the root canal or canals. The metals form soaps with the fatty products of the septic pulp. (*Cosmos*, page 864.)

Some fibres of cotton are then rolled round an ordinary fine broach and saturated with water; this is pushed up into the canals several times, until the whole of their contents are removed. An antiseptic dressing (we invariably use a mixture of "Oil of Cinnamon;" 1 part; "Carbolic Acid," 2 parts; "Wintergreen," 3 parts); saturated in cotton wool and then placed in the canals and sealed over with gutta-percha. About a week later this dressing is removed, and if the patient has been free from pain the meanwhile, the roots are filled. With regard to the filling of the roots (of course after using rubber-dam, etc., to exclude saliva), we dry the canals first with the hot air from an ordinary rubber syringe, then apply absolute alcohol, and lastly, insert the canal plugger heated to red heat. After the canal has been properly dried, we take some of the chloro-percha solution on an ordinary plugger and force it into the canal, using a pumping motion.

When we consider the chloro-percha has completely filled the canals, we insert into each a gutta percha cone, and heating the plugger slightly, press it home. We then ask the patient to let us know when he feels a sensation at the end of the root, and when this takes place we stop.

We then take a small piece of gutta percha, soften it, and, placing it in the pulp chamber, with a large burnisher press it home. This ensures the chloro percha being forced through the apical foramen and effectually sealing the canals.

The root being successfully filled, the next step is to remove all decayed dentine and to shape the walls of the root itself, and whatever part of the crown there is left standing by grinding it down by carborundum wheels and discs, so that no overhanging edges remain, and the walls are as nearly as possible perpendicular. This is very important, as it allows the measuring wire to come off easily.

Assuming that the root is now ready for taking the measure, the next step is to take a piece of fine binding wire annealed and place it round the root just below the gum margin, leaving the free ends at the buccal part of the root and twist them with a pair of flat pliers, until the root is tightly embraced by the wire.

Instead of grasping the binding wire by the pliers, two other instruments are frequently used, but, I think, the pliers are the most handy, and always use them.

The wire is now removed, care being employed not to change the shape obtained. Should there be any pain experienced in applying the wire, a five per cent. solution of cocaine may be applied to the gum round the root, and left there for a few minutes with advantage.

It is most necessary, of course, to see that the wire is adjusted all round the root, as there is generally a little bleeding; this is frequently difficult, and it is sometimes necessary to use a little cotton wool or lint to mop away the blood. Where the gum is exuberant, it is most conveniently removed by ethylate of sodium.

The wire is now taken to the workroom and given to the mechanical assistant who is to make the crown. We tell him the tooth to be crowned, and show him how the wire was removed from the mouth. The wire is now laid on a piece of soft wood and receives a smart blow with a hammer. The shape is left clearly marked on the wood.

The wire is now cut with scissors opposite the twisted end and straightened out. This gives the exact length of the circumference of the root.

A piece of twenty-two carat gold plate rolled out to No. 27 American gauge is now cut exactly the length of the wire—the two ends brought together and soldered. The parts of the band which correspond to the mesial and distal surfaces of the root are scalloped out, as the alveolar process rises higher there than on the buccal or palative (lingual) surface.

The whole of the lower margin is then bevelled so that it may adapt itself to any irregularities of the root. The band is then contoured with contouring pliers and shaped so that the margin next the gum corresponds to the imprint of the wire made previously on the wood. A little X is scratched to show the buccal surface.

This part of the process takes about half an hour. It is now taken to the operating room, where it is driven on the root by means of the crown-driver and a mallet, if these are necessary; generally it is easily placed on the root by means of hand pressure. If the band does not fit the root very tightly, we contour it a little and try it again, and so on until it has a firm hold of the root. I then ask the patient to occlude his teeth to see that the band is free from the opposing tooth or teeth, and take a piece of quite soft stent and place it into the hollow of the band and instruct the patient to close his teeth. I then mop it over with the edge of a napkin dipped in cold water to harden it quickly and remove the stent, and generally the bend comes away embedded in it. If it does not, however, it can be afterwards removed and placed in position in the stent. A model and bite are now made, and when the band is in position in the model a piece of soft wax is placed in the centre, and when hard is carved into the shape of the grinding surface of a molar or bicuspid tooth, as the case may be, so that it articulates with the bite. It has, of course, to be the thickness (size) of the plate (twenty-seven gauge) that it will be when replaced by gold. It is now placed in a soft composition of modeling clay called moldine, and a metal of low fusibility poured into it. In this, again, when hardened, is poured the same kind of metal, but just on the point of setting, and we thus get a die and counterdie on which to strike up the cap. This is done by using a piece of brown paper first as a pattern and getting the approximate size of the cap, and replacing this by a piece of gold of the same carat and thickness already mentioned. After the cap is got, the hollows made by the cusps are filled up with solder, and a catch of ordinary eighteen carat plate gold soldered on the under surface of the cap. It is now attached in its proper position in relation to the band, and soldered with No. 00 or 1 solder. It is then filled up and stoned. We prefer not to put a fine polish on these all-gold crowns, as the glitter of the gold is much more apt to catch the eye when the crown is inserted in the mouth, than if left dulled.

The root being dried, and kept dry by means of the saliva ejector and cotton rolls, a sufficient quantity of oxyphosphate of zinc to fill the interior of the crown is mixed very thin (about the consistency of cream) and poured into the hollow of the crown, which is then placed in the root, care being taken to ensure its being driven quite home.

The saliva must be excluded for about a quarter of an hour, and then the superfluous oxyphosphate of zinc, which has oozed out between the edge of the band at the root under the gum, must be removed by means of a probe or other suitable instrument. If the bite does not come exact, a little can easily be cut from the opposing tooth.

This completes the operation, which takes altogether from the beginning four or five hours—three-quarters of an hour operator's time, and three to four hours of the mechanic's. In first bicuspids, when an all-gold crown might be an objection, as in the case of ladies, we frequently finish the crown in the manner above described, and cut a square opening on the buccal wall, into which is fitted an ordinary porcelain tooth, The pins of these are soldered to the crown and the porcelain cut flush with the surface of the crown. This we find an exceedingly useful method, not materially interfering with its strength, while certainly improving its appearance.—*Transactions of the Odonto-Chirurgical Society of Scotland.*

ARTICLE IX.

THE REAL VALUE OF THE MEDICINAL PEROXIDE OF HYDROGEN PREPARATIONS FOUND IN THE MARKET.

BY H. ENDEMANN, PH. D., CHEMIST.

Formerly Associate Chemist to the New York City Board of Health.

ABSTRACT FROM THE "TIMES" AND "REGISTER" OF PHILADELPHIA, PA., DECEMRER 15TH, 1894.

In this valuable article the writer states that a standard solution of medicinal H_2 and O_2 must answer the following tests:

1. It should contain at least 15 volumes of available oxygen.

2. The quantity of free acids contained in 100 cubic centimetres, should require not less than 1 c. c. and not more than 3 c. c. of normal volumetric soda solution, to

be made neutral. Such a small quantity of free acid is not objectionable.

3. It should not contain any soluble baryta salts.

4. It must be free from sediment.

The different brands which he found on the market being submitted to the above tests, gave the following results:

BRANDS OF H_2O_2 SOLUTIONS.		Volume of Available Oxygen determined by means of a solution containing 5.665 Grammes of Permanganate of Potash per liter of distilled water.	Residue obtained from 100 C. C. of Peroxide of Hydrogen dried at 120 degrees C.	Acidity expressed in Cubic centimeters of Normal Volumetric Soda Solution for 100 C. C. of Peroxide.	Baryta found in Soluble Baryta Salts contained in 100 C. C. of Peroxide.
No. 1. John Bene's	H_2O_2 (Medicinal)	10.50	0.1886	2.19	None
No. 2. Hydrozone	....	27.35	0.2180	3.11	"
No. 3. Larkin & Scheffer's	H_2O_2 (Medicinal)	9.65	0.1206	6.75	"
No. 4. Mallinckrodt's	" "	9.55	0.14c8	1.43	"
No. 5. Marchand's	" "	16.55	0.564	1.29	"
No. 6. McKesson & Robbins'	" "	10.95	0.0540	0.44	"
No. 7. Merck & Co.'s	" "	0.50	0.2418	4.57	"
No. 8. Oakland Chemical Co.'s	" "	10.50	0.0382	0.34	0.0017
No. 9. Peuchot's	" "	10.60	0.4674	1.77	0.0018
No. 10. Powers & Weightman's	" "	8.40	0.0830	2.03	None
No. 11. Pyrozone, 3 per cent.	" "	11.20	0.0534	0.76	"
No. 12. Rosengarten & Son's	" "	3.10	0.1002	0.25	"
No. 13. Smith, Kline & French Co.'s	" "	6.15	0.0880	2.6	"
No. 14. E. R. Squibb's	" "	12.40	1 004	12.04	"

By referring to this table, it is easily noticed, that brands No. 7 and No. 12 are valueless.

The brands No. 8 and No. 9 are not fit for medicinal uses, owing to the fact that they contain traces of soluble baryta salts.

The brand No. 3 has a heavy sediment of sulphate of baryta, which may be considered inert towards the system, but it is certainly detrimental to the keeping qualities of this preparation.

Brand No. 14, which is sold as a ten volume solution, is really twelve volumes, but it is too acid.

Brand No. 5, which is sold as a fifteen volume solution, is really 16.55 volumes, viz.: About 10 per cent. above the standard.

The brand No. 2, which is sold without any mention of volume, is really a 27.35 volume solution, viz.: Ninety per cent. above the standard.

None of the other brands come up to the standard, but on the contrary they run from 35 to 55 per cent. below.

ARTICLE X.

A CASE IN PRACTICE.

BY PROF. W. D. MILLER, M. D., D. D. S., BERLIN.

The question of alveolar abscess in connection with teeth containing living pulps, has gained very considerably in interest through the recent discussions on the etiology of pyorrhœa alveolaris.

When an abscess of this kind is now observed, it is put down as the result of a deposit of uric acid or urates in the pericementum, in consequence of a general gouty diathesis and is considered as evidence in support of the view that pyorrhœa alveolaris must have a similar origin.

The following case presents some points which seem to me well worth considering in this connection.

Herr X. presented himself with a left superior central incisor very slightly elongated and slightly looser than its perfectly healthy neighbor on the right side. The tooth was distinctly discolored. On the gums, about one-half an inch above the margin, was a marked, ridge-shaped hard prominence, from the center of which exuded on pressure a minute quantity of pus. This condition of things had existed for some years. The amount of pus evacuated was never considerable and sometimes it disappeared altogether for weeks.

Being sure of a putrid pulp, I trepanned the tooth from the lingual surface, but was very much surprised to run upon living tissue. The pain produced was not intense and was pronounced by the patient as "not feeling like the nerve." Nor did it at all produce upon me the impression.

The possibility has suggested itself to me that we have here a case where the chronic irritation at the apex of the root has produced absorption of the cementum and dentine, laying open the canal of the root and that granulations from the periosteum or bone marrow have grown into the canal as has been repeatedly observed in replanted or implanted teeth.

Nothing seems to indicate the presence of any deposit on the side of the root.

The patient is a young officer of most perfect health, in whose family there has never been a trace of gout.—*Proceedings of the American Dental Society of Europe.*

ARTICLE XI.

MEDICAL MEN AND DENTISTRY.

BY DR. GEO. W. WARREN, PHILADELPHIA.

As further evidence of the need of a higher standard of dental knowledge for medical practitioners, especially those who incidentally figure as teachers, we cite the following: A well-known surgeon, who is also an author and a professor, cautions his students to "be sure, before extracting a tooth, to cut the *ligamentum dentis.*" He then relates that its discoverer "first detected it by means of a microscope, in the maxilla of a hog, and afterward demonstrated it in the human subject." Another interesting instance is given by a contributor to one of our journals. He was requested by a practicing physician, who was also an editor of a medical journal, to see a child who was "suffering from some trouble which was difficult to diagnose —a most extraordinary and distressing case. A portion of the superior maxillary bone was denuded; integument sloughing away," etc. On examination, there was found protruding, some distance above the gum margin, the denuded root of a decayed temporary tooth, such as we frequently see; this being the sole cause for the alarm. We frequently learn of physicians allowing patients to suffer from alveolar abscess, putting them to bed with the information that they are suffering from "neuralgia." And quite recently a lady called on us with the request to have a small amalgam filling removed. It was the only alloy filling she had, and was in good condition. She had been sent by her physician, who claimed he could not cure a throat affection, from which she was suffering, as long as the filling was retained.

Our literature is replete with authentic reports of such bases, but an excellent illustration of the point in hand, one that has never been published, we take from the practice of Professor Peirce. A well known neurologist had under his care a lad suffering from chorea. The case was presented to Dr. Peirce, who, on examination, found several persistent deciduous teeth, interfering with the normal eruption of the bicuspids, and these at his suggestion were removed, and within a few days the distressing symptoms disappeared. Under the care of the same was a girl ubject to attacks of epilepsy, which were thought by the attending physician to be incurable, but on the removal of several deciduous teeth and two deceased first molars, the marked improvement was evidence conclusive that dental irritation was in this case also an important factor.

A well-known dental writer, the late Professor Richardson, has truly said that it is the reproach of curative medical science that patients are daily drugged for the relief of maladies which, being purely symptomatic of, or dependent on, dental diseases or irritation, are diagnosed and obstinately and perseveringly treated as idiopathic affections.

It is also a reproach of conservative medical science that countless numbers of teeth are, year after year, uselessly and mercilessly sacrificed through the direct agony, or complicity, of many medical practitioners; and a reproach of sanitary medical science that, while the greatest circumspection is displayed in guarding the many approaches to the citadel of health, one of the most exposed and vulnerable points, whose defense is essential to the general safety, should be left so entirely uncared for.

Of course, all medical practitioners are not thus perverse and stupid. We number among our clients several of the most active physicians, who are always anxious, through personal and professional intercourse, to secure any information of value. Many of us, too, are called in consultation by physicians who recognize the close relationship of dentistry and medicine. But these are the exception—they are the salt of the profession. It is the average medical practitioner (which is the majority) to whom we allude.—*Independent.*

Editorial, Etc.

DENTAL SURGERY.—At the meeting of the Odontological Society of Pennsylvania Saturday night Dr. B. Holly Smith, of Baltimore, read a paper in favor of continuing the present plan of a three-years' course in the dental schools and not prolonging it to four years. Dr. William Shaw Twilley and Dr. Richard Grady, also of Baltimore, contributed historical sketches respecting the protest of Baltimore dentists against the classification of dentists as manufacturers, which subject is now in the care of the American Dental Association. They argued that time and success had vindicated the protest, because the census bureau had discontinued its efforts; that as far back as August, 1890, in the public press of Baltimore the claim was made that everything which dentists make in practice is surgical; that filling teeth is a surgical operation; that, the exhibits at the International Exhibition in Philadelphia in 1876, embraced pivot teeth, dentures, apparatus for the correction of congenital malformations of the palate and loss by scrofulous and syphilitic necrosis were surgical on the testimony of the judges, all of whom were in medicine and surgery: that in September, 1890, they had challenged the definition of mechanical dentist as given by the census office which was to "embrace all branches of the profession except the extraction of teeth" and the term was afterward given a new meaning; that they had never gotten an answer to the query, "why the repair of the teeth should come under mechanical employment and the repair of the body belong to a liberal profession." The subject was further discussed by Dr. L. Ashley Faught, who conducted the correspondence for the Philadelphia dentists with the census bureau and by Dr. J. D. Thomas, who went from Philadelphia to Washington to defeat the bill which provided fine and imprisonment for refusal to answer questions.—*From the Phila. letter of the Baltimore Sun, March 10th, 1895.*

PROGRAM OF THE SECOND UNION MEETING OF THE WASHINGTON CITY DENTAL SOCIETY AND THE MARYLAND STATE DENTAL ASSOCIATION, AT THE ROYAL ARCANUM HALL, BALTIMORE, MD.

MORNING SESSION, WEDNESDAY APRIL 17TH, AT 10 A. M.

Cyrus M. Gingrich, D. D. S., of Baltimore, Chairman of Joint Committee, will open the meeting.

C. C. Harris, M. D., D. D. S., of Baltimore, President of the Maryland State Dental Association, will make the Address of Welcome.

J. Roland Walton, D. D. S., of Washington, President of the Washington City Dental Society, will respond.

Roport of Committee on Publication, Voluntary Essays and Dental Legislation. Williams Donnally, D. D. S., Chairman, of Washington.

Essay, "Pyorrhœa Alveolaris," B. F. Arrington, M. D., D. D. S., Goldsboro, N. C.

AFTERNOON SESSION, AT 2 P. M.

Report of Committee on Dental Education, Literature and Dental Nomenclature. M. F. Finley, D. D. S., Chairman, of Washington.

Essay, "Dental Education," A. W. Sweeny, D. D. S., of Washington,

Report of Committee on Orthodontia and Dental Appliances. Jos. Roach, D. D. S., Chairman, of Baltimore.

EVENING SESSION AT 8 P. M.

Essay, "Bacteria of the Mouth," Dr. Wm. H. Welsh, Professor of Pathology, Johns Hopkins University, Baltimore.

Essay, "Nitrous Oxide as an Anæsthetic," Dr. Geo. T. Kemp, of Johns Hopkins University.

Report of Committee on Pathology and Therapeutics. E. P. Keech, M. D., D. D. S., Chairman, of Baltimore.

Report of Committee on Operative Dentistry and Surgery. W. St. Geo. Elliott, M. D., D. D. S., Chairman, of New York.

MORNING SESSION, THURSDAY, APRIL 18th, AT 10 A. M.

Report of Committee on Anatomy, Physiology and Histology. D. Elmer Wiber, D. D. S., Chairman, of Washington.

Essay, "Scientific Root Filling and Ideal Crown and Bridge Work," Nelson T. Shields, D. D. S., of New York.

Report of Committee on "Crown and Bridge Work." H. M. Schooley, D. D. S., Chairman, of Washington.

AFTERNOON SESSION AT 2 P. M.

Essay, "The Benefits of Laws Regulating the Practice of Dentistry," L. Ashley Faught, D. D. S., of Philadelphia.

Report of Committee on "Mechanical Dentistry." A. J. Volck, Ph. D., M. D., D. D. S., Chairman, of Baltimore.

Banquet at 8 P. M.

CLINICS.

Dr. W. B. Finney, Baltimore, Md., will insert contour gold filling.

Dr. H. B. Noble, Washington, D. C., will exhibit Models of Irregularities and their Appliances.

Dr. Nelson T. Shields, of New York, will make a piece of Bridge-Work; will also show practical cases in the mouths of patients from New York; will exhibit a Porcelain Bridge ready for insertion, and will afterwards place it in the mouth of his patient."

Dr. F. F. Drew, of Baltimore, Md., will exhibit a case of correcting an irregularity by the Masking Method.

Dr. Wm. Shaw Twilley, of Baltimore, Md., will show a method of placing and replacing porcelain faces in Crown and Bridge Work.

Dr. N. T. Shields, New York, will demonstrate his method of filling difficult root canals to their apices.

Dr. L. B. Wilson, Cumberland, Md., will demonstrate his method of making crowns and bridge work by the electro-deposition.

Dr. David Genese, Baltimore, Md., will present a case showing treatment and its results in bridge work, in gold and the same in vulcanite, with treatment and extraction of nerve under a new method.

Dr. Chas. B. Munson, Washington, D. C., will make and demonstrate the Jackson wire crib for regulating teeth.

Dr, C. C. Carroll, Meadville, Pa., will give a clinical lecture on Aluminum in Dentistry.

Dr. J. L. Wolf, Washington, D. C., will fill a tooth with amalgam, securing additional anchorage by means of oxy-phosphate.

Dr. A. Lee Penuel, Leesburg, Va., will insert a contour gold filling.

EXHIBITS.

The S. S. White Dental Mfg. Co., Phila., Pa., will exhibit Electrical Appliances and Novelties of recent invention.

The Hollingsworth System of Crowns and Bridges will be demonstrated.

The Harvard Co., of Canton, Ohio, will display a Dental Chair and Cabinet.

The Horlick Food Co., of Racine, Wis., will exhibit their Malted Milk, and furnish members with samples of same.

J. W. Ivory, of Philadelphia, Pa., will display a full line of his Dental Specialties.

The Chas. H. Phillips Chemical Co., New York, will make an exhibit of their Antacid Preparation—Phillips Milk of Magnesia and explain its uses.

The Medical Novelty Co., New York, will make an exhibit of Borine and will distribute sample bottles of same to the profession.

The Diamond Tooth and Tool Co., New York, will make an exhibit of Burs.

TOASTS AT THE SECOND UNION DINNER.

F. J. S. Gorgas, M. D., D. D. S., Baltimore, Presiding.

E. P. Keech, M. D., D. D. S., Baltimore, "Dental Profession."

L. C. F. Hugo, D. D. S., Washington. D. C., "The Dental Limbo."

L. Ashley Faught, D. D. S., Philadelphia, Pa., "The National Association of Dental Examiners."

B. Holly Smith, M. D., D. D. S., Baltimore, "Union Meetings."

A. W. Sweeny, D.D.S., Washington, D. C., "Modern Dentistry."

H. B. Noble, D. D. S., Washington, D. C., "Dental Societies and Society Work as a Means of Education."

N. T. Shields, D. D. S., New York, "The Future of Dentistry."

Richard Grady, M. D., D. D. S., Baltimore; A. G. Cockerille, Washington, D. C.; A. J. Volck, M.D., D.D.S., "Dental Literature."

Monthly Summary.

"DENTAL MEDICINE."—A Manual of Dental Materia Medica and Therapeutics. By F. J. S. Gorgas, A. M., M. D., D. D. S. Fifth edition, revised and enlarged. Philadelphia: P. Blakiston, Son & Co., 1012 Walnut Street. 1895.

Evidently this is one of the most favorite, if not *the* most favorite, of the many professional labors of love in which the industrious author has engaged. Whatever Dr. Gorgas has undertaken, he has done thoroughly well; but we feel that in this work especially he has elaborated one of the best text-books in use. In addition to many new recipes, and new remedies, such as Pental, Tropacocaine, Phenosalyl, Dermatol, Eugenol-acetamid, etc., the author has made many material improvements in the general text, and, in brief, has brought the work up to the present status of dental medicine. To the dental student it is an absolute necessity. To the intelligent practitioner it is a new inspiration. To your "purely practical man," who prescribes remedies he does not understand, in pathological conditions of which he knows as little, it will even assist, and no doubt encourage, his empiricism. No doubt a great deal of the materia medica of the present day is empirical, and were every practitioner to be examined as to his knowledge of the composition, physical peculiarities, physiological effects, incomputabilities of the various drugs in daily use in dental practice, the average student could "refer back" the average dentist. It is not uncommon in these days of the free use of local anæsthetics, of whose composition the dentist knows nothing, to find the most profound ignorance as to the active absorbing power of the lympathics and capillaries of the subcutaneous cellular tissue, upon which hypodermic medication depends. It is not uncommon to find your eminently successful "practical man" as foggy on the effect of dental medicines on the circulation, how they enter, how they act when they are there, and how they are excreted, as how the milk gets into the cocoanut or the seed into the apple. A work like that before us should shame such ignorance, and make the most self-assertive "practical man" realize that he has not learned the first principles of his profession. Of course it is the bounden duty of an author to omit no important drug which has been brought before the profession. Yet, we venture to believe that the best results in practice are obtained, not by continual experimenting with the commercial fads of the pharmacist, but by confining the practice, as much as possible to a few, and those the agents which experience has proved to be most successful. We can only commend Dr. Gorgas' work as full of information and suggestion.—*Dominion Dental Journal.*

A NOTE ON CAPPING A TOOTH PULP.—By C. R. Taylor, D. D. S., Streator, Ill.—It is often troublesome to cap a pulp with oxyphosphate of zinc on account of that material sticking to the instruments used to convey it to the parts desired to be covered without spreading it over the whole of the cavity. By the use of the following method the troublesome part can be avoided.

Take a piece of clean writing paper of the proper size and on the paper place a sufficient quantity of the cement, soft or hard, as the case requires; having taken hold of the corner of paper with the pliers before the cement was placed on the paper, carry the paper and cement to the parts to be capped, pass a burnishing instrument against the paper and burnish the capping to its place. If it is desired to get the benefit of the sticking qualities of the cement to assist in holding the filling in the cavity, put cement on both sides of the paper, before placing it in place.

The same method can be used with the paper and chloro-percha.

Not only does the paper act as a convenient carrier but it is a splendid non-conductor. Superior to almost everything used for that purpose.—*Dental Digest.*

COPPER amalgam is sometimes useful for repairing rubber plates, replacing a block or broken tooth without vulcanizing.—*Dominion Dental Journal.*

THE NECESSITY OF A HIGHER ESTIMATION OF TOOTH AND MOUTH HYGIENE.—At a meeting of the Berlin Society of International Medicine Dr. P. Ritter recently made an address on the subject. He pointed out how the mouth was the starting-point and breeding-place of germs, and he had frequently seen workmen and workwomen lose their places on account of want of the incisor teeth or foul breath. Continuous toothache frequently led steady men to the brandy bottle for the relief of pain. In pregnancy the necessity for attention to the mouth and teeth was especially great, as women at these times so often suffered from tooth and face ache. Probably the cause lay in excessive nausea, thus leading them to neglect the care of their teeth, so that the secrections became acid and favored caries. Women should be recommended to brush their teeth three times a day after the third month, using some astringent fluid and an alkaline tooth powder, and a moderately hard brush. On the basis of many years' experience, he held the following to be demanded:—The appointment of experienced dentists to examine the mouths of all school children at stated intervals, the parents to be informed of the result of the examination, and left to have the treatment required carried out privately or through institutions; the appointment of dentists for the poor; delivery of addresses in the Volksschulen on the importance of the masticatory apparatus and the toilet of the mouth; dissemination of printed instructions on the toilet of the mouth to the whole of the poor population.

VITALITY CONDITIONED.—The native inhabitants of Greenland and Labrador, living almost exclusively on animal food, preferably that which is fat, have fine teeth almost entirely free from decay. The same is true of the Gauchos, a tribe of cattle-breeding people inhabiting the great upland plains of South America, and subsisting entirely on a meat diet. This same people, living in another part of the country, in towns, and consuming a mixed diet, suffer considerably from decay of the teeth. The Scotch people, who eat large quantities of oatmeal, and the Chinese, who live almost exclusively on a vegetable diet, have, as already mentioned, very poor teeth. The only conclusion which can be drawn from a careful examination of the foods of all nations is that vigorous people may be perfectly nourished on a great variety of food materials, while the most carefully selected diet will not maintain a high standard of vitality among a people where there is a prodigal waste ot nervous energy.—Dr. J. S. Wiiliams, in *Items of Interest.*

THERE are some queer questions regarding the teeth not generally broached, or if mooted, not altogether settled, or if they seem to be settled, do not stay settled; such, for instance, as the following:

How much circulation is there in a healthy tooth; and what is the nature of that fluid?

Is there any circulation in a dead tooth while still in the mouth?

Is there any change in the constituents of a live tooth?

Of what does the life of a tooth consist?

What is the cause of sensitive dentine?

Why is a tooth more subject to caries while alive than when dead?

Why is a tooth more subject to dissolution in than out of the mouth?

DR. CUNNINGHAM, of Cambridge University, says of tooth powders:—The principal action should be mechanical rather than medicinal. The powder should be very finely grained and should contain no cuttle fish powder, no powdered oyster shells, no pumice powder. It should consist of alkaline substances and contain no acid ingredients, nor such as are capable of changing to acid in the mouth. All fermentable substances such as carbo-hydrates are contra-indicated."

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ARTICLE I.

CHAPIN A. HARRIS, M. D., D. D. S.

BY. SAMUEL J. COCKERILLE.

Mr. President and Brothers of Maryland Dental Society:—

I hold in my hand an address made to the Virginia Dental Society. With your consent I will now read it. It will require only a few minutes. It is an effort to get justice to the memory of the noble Chapin A. Harris, the father of our glorious profession. I will then endeavor to show why every dentist in Maryland should lay hold of the good work and push it to a grand ending.

You are greatly indebted to the noble men of your own state. While remembering and honoring Harris and his work do not forget that Maryland gave to the Profession the most learned man and greatest teacher she ever had—Philip H. Austen. You should not allow these names and those of Hayden, Handy, Bond and Piggott, to pass into oblivion.

While ingratitude is the basest of sins, gratitude is the sweet smelling virtue that makes its home in the manly and pure heart. The works and valuable services of Harris forgotten? The great virtue, gratitude dead in your minds, hearts and souls? No, not dead, but sleeping; and we are here to day to rouse you from your slumber and press you into action, and remind you of the duty of performance. Harris' name should be dear to every dentist, and especially so to this Society, and to each and every dentist, and of this State. His virtues and merits demand a monument of this State. It is a most laudable undertaking, and surely will receive approval of the mind, heart and soul of every member of our glorious Profession for the perpetuation of an honorable fame. Sixteen thousand dentists in this land of free institutions allow their father's name to pass into oblivion unhonored and unsung? Will not our brothers of the great city of Baltimore, and State of Maryland make it a labor of love, as it is their duty to erect a monument to this good, great and noble man? The marvelous acts of self-sacrifice to which his love of dentistry and brotherly love for mankind gave birth, should be blazoned before the eyes of the world, for emulation by those who are to enjoy the benefits of dentistry after we have passed over the river.

We know you have an admiration and reverence for his great character; you could not have less for the father of your profession; then put forth your greatest and noblest efforts to honor his fame and name. The responsibilities of life are great. With truth, honesty and determination he was always striving for the right, and at the same time striving to induce the less fortunate to abandon the errors into which they have fallen. He was a man of character who looked at the heart, and not at the arm; he weighed the justice of his cause, and not its outward strength. The question settled his path was clear. He went forward boldly, were it even against the entire profession, and looking for reward only in the conscious fact of duty done, and the good the human family would reap. He did not allow himself to be driven from the right.

Dollars are not the only thing in the world. In the right, we are never alone. The Great Master is always with those in the right; and therefore they will always be on the strong side. When we are battling truth against error, we should have no internal uneasiness. If we are fortified with steadiness of purpose and energy we are sure to stand. His life was a grand success, because he was always fortified with steadiness of purpose and energy. He knew the muscular power, the nervous strain and great skill required in doing full duty to dentistry; and that the true man would not allow himself to be tempted and drawn into the wrong. He taught us to labor for truth, not with passion and hypocrisy, but with integrity of purpose, with determination to maintain what is true although contrary to dollars, numbers and any system. The enthusiasm which with many is fitful and spasmodic, was with him the current of his life; solemn and deep as the tide of his life. Chapin A. Harris was unselfish and ambitious, but his ambition was manifested by industry and energy to gain all knowledge possible and was at all times ready to distribute and willing to communicate.

We regard the establishment of the Baltimore Dental College as the epoch in the history of our profession, and we admire the life and character of the man to whom we are most indebted for the great advantages dentistry has conferred upon us, and the invaluable blessings which have flowed from his matchless work. We know you appreciate it, and you should feel there is a duty resting upon you and show respect and reverence for his noble efforts, so that his work may be handed down—the admiration of future generations. He spent his unselfish and ambitious life in the service of dentistry, and you should rise in your might and discharge a debt of gratitude to his memory, and erect a *monument* that will be a lasting evidence of your thanks and your love to him who gave to us our glorious profession. Harris toiled for her advancement from night till morn; from morn till dewy eve; the

Baltimore Dental College and the principles and practice of dentistry, are time-honored and lasting monuments of the essence of his wisdom. The richest heritage he could have bestowed. You and I profited by these advantages. What would we have been without them?

Duty neglected!—a fearful thought!—Harris—the inspiration of your first love. What was the birth, purpose and original first love of dentistry? It was born of a consuming desire to do good to our fellow-man. Harris saw the framework of a great profession—dead laymen ministered it its altars—they wandered like sheep without a shepherd. It was out of this necessity that your profession came. Harris died in poverty, but in glory; for he had laid the foundation of dentistry which when properly appreciated will become the wonder of the world. Take not your eyes off its birth purposes. Be true to that birthright. When you fail to devote yourself to the work Harris set apart for you, your occupation will be gone. There will be no place for dentistry among honorable professions. Remember your birthright, and be true to your mission.

To our younger brothers we say never forget it is more honorable to lay off the harness, than to put it on. It is a noble and great thing to cover the blemishes and excuse the failings and short-comings of a professional brother and friend: to draw a curtain over his stains, and to display his perfections; to bury his weaknesses in silence, and to proclaim his virtues and his good qualities from the house-top. Imitate as far as possible the love of Heaven. Love hides a multitude of sins. Let your thirst after knowledge be equaled only by your desire to communicate what you have learnt. Make your influence far-reaching and extensive, and who can estimate your good to the profession and to mankind? Make your books your constant companions. If you wish to achieve a bright destiny in your profession; you must work with your books as faithfully as it is possible to labor with your instruments. Will you by pursuing such a course, fail? We trust not, although you will have to encounter black and lowering clouds if not storms—let troubles come as they may, be earnest and determined; and success is sure to follow.

Walk in conformity to art, and science, and good example; not only injuring no man, but doing good to all. Never hesitate between conscience and interest, but with courage and energy attack errors and mistakes.

Trust not in man, but ever remember that God strives to lead us right, often unfelt when helping the most; unseen, when nearest of all.

MR. PRESIDENT, we regard it as the duty of this Society to feel they have an exalted mission to fill, and it is their bounden right to do all that is possible to honor the noble man who raised dentistry from a low and ignominious standing, and gave her the rank of a glorious profession.

We have attempted to render to you no new version of his life; we do not forget that we are standing in a City and State where every dentist holds his memory sacred, and a rehearsal of a story long ago learned and treasured in your hearts would only prove a tax upon your patience—carrying coals to Newcastle.

In your efforts draw together as one man, with a single heart and common purpose, and you are sure of success.

Chapin A. Harris was an inspiring example of fidelity to truth and duty; a landmark and Polar star, for the guidance of all who love their fellow man; and for all who worship virtue and honor science.

ARTICLE II.

LYCOPERDON FOR ALVEOLAR HÆMORRHAGE.

BY C. BREWSTER, L. D. S., MONTREAL.

Read at Vermont State Dental Association.

I have been requested this evening to address to you a few words on the subject of lycoperdon as a styptic for arresting alveolar hæmorrhage. Like a great many other things, this material is *not* "new under the sun." It is a growth of nature, to whom we owe so many of our best remedies, and is found in most countries. It is one species of a very large family, however; and though most of the different kinds of the lycoperdon are useful as styptics, there is one special kind that is better than all others. It, however, takes considerable experience to discern the good from the indifferent. Lying in the fields for any great length of time, exposed to the various changes of atmosphere, it is subject to a certain deterioration which is only detected by careful examination. Fully a fourth of what I have had collected for me I have been obliged to throw away as useless.

As quinine in its own department—itself one of Nature's own special remedies—stands pre-eminent for its curative powers over all competitors; so, too, lycoperdon will be found supreme in its curative powers over all other styptics for the arrest of alveolar hæmorrhage. One of its peculiarities is its *healing power*. Plugging the alveolar cavity with any of the other known styptics, such as perchloride of iron, tannin and many other well-known remedies, too numerous to mention, is invariably followed, after the bleeding has been arrested, by much, inflammation and severe pain. When, however, we use the lycoperdon for plugging the cavity, we find the very opposite effect is produced, the wound instead of presenting an angry, irritated appearance, and healing up very slowly, shows every inclination to heal by first intention, and not only that, but it shows a decided tendency to heal more rapidly than under ordinary circumstances. This can be easily proved by taking a case where two teeth have been extracted from the same mouth at the same time, and plugging one of them with lycoperdon and leaving the other to the usual process of nature. It will be found that the cavity that has been plugged will heal the fastest. Fortunately alveolar hemorrhage is not a very frequent occurrence, but *unfortunately* it has a bad habit of springing itself on a dentist at the most unexpected times, and often when he is not prepared with the proper remedies to meet the case, his perchloride of iron has evaporated or looks as though it has gone bad, his tannin he can't find, and so on, and so on. Somehow these bleeding cases have a bad habit of coming on in the night, or some other awkard time.

I have forgotten where I met the historical statement that when Cæsar landed in Britain the soldiers staunched their wounds with the puff-balls they found in the fields. In 1853, Dr. Benjamin Ward Richardson experimented with the form of fungus called lycoperdon giganteum, having been led to do so by witnessing its use to stupefy bees before robbing hives, a custom in use centuries ago in England. Dr. Richardson found that, exposed to heat the fumes produced anæsthesia, and from 1853 to 1860 he thus narcotized more than one thousand animals, also making himself unconscious by its use. He recommended its revival as a styptic in alveolar hæmorrhage, but, for some reason unknown to me, it was not popularized. I am disposed to believe that it may have been due to the fact that the species of fungus with which he experimented, the lycoperdon giganteum, was not the best; and it is possible, too, that the decrease of want of contractility in the blood-vessels, and especially of alveolar hæmorrhage, due to the more general use of fruits and better hygienic knowledge, made the matter of less importance to him than it was thirty years ago. There are still, however, very frequent cases of hæmorrhage. In all cases of anæmia, where the fibrin is in inefficient solution, and the blood itself is of feeble coagulating power, the vascular trunk will have feeble, contractile power, and hæmorrhage is apt to occur after tooth extraction.

Of course in marked hæmorrhagic diathesis, or when excessive bleeding depends upon some previously existing disease, it is wise to avoid or defer surgical operations in the mouth, if possible. The regulation of diet and the constitutional precautions are outside the province of the dentist, and should be relegated to the family physician.

However, when we meet with persistent hæmorrhage in our office, one of the first things to do is to discover if the flowing blood is a blood that will coagulate. If a little is caught in a spoon, and the fibrin is seen to clot in three minutes, the vascular or mechanical cause will disappear of itself. But if the blood will not clot, we can rarely, if ever fail by plugging the socket with the lycoperdon. I have seen failures from perchloride of iron, tannin, and the other styptics of the pharmacopœa. I have known perchloride of iron to be used at the boiling-point with no effect; and not long ago a case occurred in Montreal, one of spontaneous bleeding from the gums, in which no extraction had been performed, and notwithstanding the ligaturing of the carotid by one of our best surgeons, Dr. Roddick, the patient died.

Before passing altogether the anæsthetic properties of this fungus, I may mention that some years ago experiments were performed in Montreal, by Dr. Beers, by placing kittens in a chamber, to the outer surface of which there was a small iron box perforated beneath, and having a pipe opening into the box above. After freely distributing the fumes through the chamber, a kitten was put in. In six minutes it was insensible; remained thus for twenty minutes, having its ears clipped and otherwise treated without consciousness, and afterwards recovering and enjoying a good drink of milk.

If you inhale the lycoperdon through a hookah pipe, letting the fumes first pass through potash water, to clear them of carbonic acid, its effect is more lasting than chloroform. As a styptic in alveolar hæmorrhage, its effect is instantaneous. By removing anything in the way of thickened blood from the alveolar sockets, and opening the cellular tissue integument which invests them, bits of the fungus can be easily pressed in with the finger, and a piece of cork, spunk, lead or even cotton placed on top of it, and the jaws closed, and the patient kept quiet, cool and erect. It is wrong to let the patient lie down, or to give any alcoholic stimulant, as the object is to quiet the system.

I wish to draw attention to the fact that I have found the greatest virtue to lie in the genus lycoperdon bovista. The genus giganteum is the largest and easiest obtained; the bovista is small and scarce. The former is considered a distinct species, but the styptic properties of the bovista are much superior, containing a large proportion of phosphate of soda. It occurred to me to select the bovista, and medicate it with carbolic acid and camphor, by which means I have removed certain objections to it, and made it antiseptic as well as styptic.

I am indebted to Mr. Hoffman, of the Geological Survey of Canada, for assistance in obtaining the following analysis of the ash of bovista gigantæa. Mr. T. Nettleford, F. C. S., Englang, who made the analysis, speaking of the peculiar stalkless fungi growing close to the ground, infers that they collect the mineral matter from the soil:

	Per cent.
Dry substance at 100 C .	8 35
Water	91,65
Ash	0.571
Ash on dry substance . .	6.36

Analysis of the ash. Calculated on plans calculated on residue,

	Per cent.	Per cent.
Resoluble residue in hydrochloric acid	0.000	
Alumina	0.107	15.66
Magnesia	0.000	2.93
Sulphuric acid (H. 2 So. 4) . .	0.060	8.79
Silica (Sig 2)	0.003	0.44
Lime (Cro.) mere traces . . .		
Phosphate of soda . . .	0.381	72.18

It is noticeable that phosphate of soda was once largely used to arrest hæmorrhage, and it appears that the styptic properties of the puff-ball is due to the excess of this substance.—*Dominion Dental Journal.*

ARTICLE III.

NEURALGIA.

HENRY BLANDY, L. D. S., EDIN.

When a dentist speaks of neuralgia, he means a nerve pain of a more extended character than odontalgia, or toothache. When a patient complains of pain of a shooting character in the head, the ear or arm, we say he has neuralgia; we examine his teeth carefully, and we generally find a decayed tooth, or teeth, or stumps, which indicate the locality of the nerve lesion which gives rise to the pain. We remove the decayed tooth and we generally cure the patient.

Some little time ago I had a lady patient who had suffered severely from neuralgia in the head; she had been under treatment by a physician for many months; she had been to Smedley's Hydro. for nine months to get up her general health and tone; she had had a course of massage I suppose on the same principle that muscular rheumatism would be treated, and which is treated effectually in that way—but with no improvement. The racking sleep-destroying pain still continued. She did not believe it could be her teeth, but came to have them examined as a forlorn hope.

There was an upper wisdom tooth decayed, but I diagnosed the lower wisdom as the offender, which was apparently quite sound. This tooth was very sensitive to hot air applied by the hot air syringe, and to cold water. But she declined to allow me to extract it, and decided to have the upper tooth out. It was decayed, and of no great value, so against my advice I took it out. In a week or two she returned; there had been no improvement. Had the upper wisdom tooth been a sound and useful tooth, or been capable of being made in one filling, I should, of course, have refused to extract it. I look on the dentist as the arbitrator between the patient and his impatience. The one is a professional and the other an amateur. The proverb "Every man knows where his own shoe pinches" does not hold good with regard to teeth. On this second visit I was able to get my way, and extracted the lower wisdom. I found the nerve cavity full of pus. We all know how painful a simple gathering on the finger may be when the finger swells, and there is heat and great congestion. The tooth cannot swell, and we get the congestion in the confined pulp chamber, consequently there is compression of the delicate nerve filaments, and we get extreme pain. But the pain may not be localized to the tooth, and we get what we call reflex neuralgia. Neuralgia might also be caused by the deposition of secondary dentine in the pulp chamber.

Neuralgia which may sometimes be relieved by dressing the cavity in some tooth—destroying the pulp, clearing it out and filling it. A young lady came with intense neuralgia, saying she thought she would go mad. She paced up and down the surgery, and demanded almost instant extraction of an upper lateral tooth. This was the only decayed tooth she had, and would have left an unsightly gap, and she would have had to be bothered by a plate for one tooth. I injected morphia in her arm and dressed the cavity—destroyed the nerve and eventually filled the tooth with gold, saving it for appearance and mastication. A gentleman brought his doctor to give him an anæsthetic to have an upper molar out, which I stoutly refused to extract, though under threat that he would go elsewhere, and find a dentist more amenable to reason. But he gave way and I saved that tooth.

Another obscure case of neuralgia is the malposition of teeth. A medical man of 50 years complained of great pains all over his head. He dare not take chloroform or even gas. I believed the trouble to be in the upper right cuspid, under which was a large swelling. I injected cocain and went for the stump. but the instrument slipped and I failed. I went deeper and failed again. Then with my saw edge forceps I trephined till I had a very firm hold, and it took a long and strong pull, but when it came I found I had a large cuspid which had never been erupted. It was lying nearly horizontally in the alveolus. The other case was nearly similar, in a patient of 45, whose cuspid was under sound bicuspids.

A third of malposition, causing great neuralgic pain was that of the wife of a coachman, aged about 45. She had no bad teeth, and apparently a healthy mouth. All her teeth were present except the left upper wisdom. The second molar was decayed in the crown. I carefully tapped this—she winced. On extraction I found the palatal root broken off nearly to the neck. The fracture was not flat and even across, but slightly cupped, evidently not fractured but absorbed, as the roots of temporary teeth are To prove this I immediately extracted the wisdom tooth, which was underlying, and it fitted exactly the second molar palatal root. The same thing sometimes occurs with lower wisdoms, which will burrow under the gum and eat their way in the pulp chamber of the lower second molar. I have the following notes in my hospital case book for last year. Mrs. R., 34, neuralgia 11 years; use of arm gone for 3 or 4 years—3 or 4 days at a time—had not been able to attend to her hair for 5 years. I extracted teeth. Three weeks afterwards she was better and had regained the use of her arm.

Salter gives a case where the right arm was seriously affected—became nearly powerless, and was constantly in a state of aching pain—the patient could hardly grasp or hold anything in her right hand. Facial palsy occurred with dimness of the right eye. A week later she had complete facial paralysis, deafness, and her right arm as above. Upper right wisdom tooth removed. Before patient left the house pain of arm and powerlessness had vanished. Patient quite cured in a fortnight.—*Dental Record.*

ARTICLE IV.

RECURRENCE OF DECAY AT THE CERVIX.

PROF. J. FOSTER FLAGG.

You all admit that recurrence of decay at the cervical border gives you the greatest difficulty to surmount, and as yet you have not reached the couse nor the remedy. It must be admitted that if this one thing can be mastered, we have overcome our most powerful foe.

It is a fact not to be denied that every dentist cries out for some method to prevent recurrence at the cervix. This is positive proof that ever one has hands full of proximal cavities from the cuspid back. Every one must admit that contour fillings have been the only help or partial cure, though it has to be repeated or requires patching.

A case presents where caries has run wild. Not a proximal surface scarcely but is involved. No pulps quite exposed, but threatening. Every tooth has been filled and refilled, and by more than one dentist. Contour has been attempted. Where the fillings of gold remain they are so undermined there is nothing but utter annihilation unless all are removed. The teeth from their loss of proximate surfaces are all out of articulation, which can be best seen by taking an impression and putting the casts in my articulator. Look closely at the cervix, and you will find the root of each so close that no thread can be forced through and the decay is far up under the cervix. Look further and probe for the alveolar process, and not a vestige of it remains for a quarter of an inch up. Look also to the second molar where the first has been extracted, and on that side the process has gone far down and nothing but loose gum tissue remains, and is constantly receding, and wherever a tooth has been lost the process about the cervix absorbs as the body of the jaw absorbs.

In this state of affairs you put on your dam and separator, and you obtain a slight widening, and at once fill permanently the excavated tooth. No attention is paid to the articulation of the teeth. You have no desire to wait, and you rush on headlong to fill and get your pay. The rest of the teeth are left without anything in them, till one by one you have had your patients at least twice a week for months, two hours or more at a sitting, till they are exhausted and condemn dentistry, and while you are rushing through to complete every cavity with a filling, you have done nothing to prevent further rapid decay, and pulps become exposed and patients have to suffer.

I know this is the case with nearly every man's practice. I see it every week, and I know from personal contact in conversations with patients of others who have not come for treatment.

You can do better than this, and not only retain your patients, but bridge over time as well as space, and fill at your leisure.

I will take the same mouth just illustrated, and without placing in one single permanent filling of any kind of metal, treat it with pink gutta-percha alone, with a little of the white as a facing, where necessary. I cut out only partially the cavities on one side of the jaw, always exposing every grinding surface where the proximal is gone, and make compound by running all of the cavities in one, seldom leaving any proximal cavity to stand alone, but opening it in the grinding surfaces. This is a cardinal principle with me. There is one surface on border I complete at once, and that is the cervical, so that I never have to touch it again, and this I cut so far up as to not only remove all caries, but where I know the gum and process will grow up and over it. This is finished, and to enable me to do so I forgot to say, I never put on the rubber-dam in any case till I fill permanently, when the cervix is firm and will admit of its adjustment. It is easy to stop the blood with perchloride of iron, creasote, or any styptic.

And now for the further treatment. In all the spaces I have made I place great pieces of pink gutta-percha, and, with no separation between them stuff the whole intervening space, trim and let alone. This I do till every place is filled in. I dismiss the patient, and have him call in three or six months or a year, as I may please; and, as I find the teeth wide enough apart for a plus-contour filling, and the alveolar gum border and process is in perfect health, and the process has grown up to the gutta-percha, then I fill only those that show that they are far enough apart at the cervix to permit a healthy, full process to grow that the gum will have proper substance, and cleave to the root and cover up and over the margin of the filling at the cervix. In this is your future security at the alveolar border.

No one has ever called attention to the difference in width of the proximal spaces at the cervix for the bicuspids and molars. The gutta-percha should remain in till double the width or space is gained between the molars than the bicuspids, on account of the greater size of the molars, where more proximal surface is in contact and no room left for cleansing, unless the spaces are very much greater than normal, and the contour made to suit this issue. Here is where you will say, "You will destroy the articulation and cause greater strain on the filling and the teeth." No, you are mistaken. When the whole of these proximal surfaces are filled with the semi-elastic stopping, and the act of mastication set up, the teeth that at first are out of the normal position, and only touch on part of their crown surfaces, are now allowed to readjust themselves; as the gutta-percha will give where the greatest pressure is brought to bear, and where least resistance is offered, no change occurs. I am not mistaken in this. Try it.

This method is a test for any further treatment, which, if needed, can so easily be done. It permits of weeks, months and years before the permanent filling need be introduced. No danger of decay, none of loss of structure from fracture. And, in fact, you can dismiss the patients thus treated with the greatest indifference as to the issue.

Do you ask whether I charge for all this work, and when I send in my bill? I charge for even my thoughts as well as my work. My patients never object to the gutta-percha.

Thus I practice with all; and I am happy in this, knowing that I do far more good, am not troubled about immediate root filling,—fillings falling out,—"conservative treatment of dental pulp." Nor does pyorrhœa ever invade on my domain of original work, because I know the value of articulation, and how to make every tooth perform its individual and collective function, and no improper pressure given it to press or work its life out of it and give rise to the denudation of the peridental membrane: nor is the food ever found pressing up in the cervical border and remaining, nor the cervix so weakened by want of contact with firm alveolar processes, and the gum is left to hug the root at this vital portion so tightly that nothing ever creeps in to cause recurrence.

Any dentist who allows his original patient who follows orders to have pyorrhœa should be sued for damages. See that no food presses on the gum border; see that no tooth is improperly pressed and contorted by false articulation, caused by improper width and contouring; allow no biting of threads, cracking of nuts, biting of ice on one tooth only, or, when a tooth has been lost, see that the articulation is restored, and my word for it gout or no gout, syphilis or disease, phorrhœa will not come, except filth and malaise of one or more teeth.

Gutta-percha used as matrices for gold, amalgam, or oxiphosphate fillings I will not dwell on; you need nothing better. For holding teeth in position after correction where there are cavities in both, I need only mention it. As for assistance on the temporary and permanent teeth, to keep the ligature from slipping down on the cervix by carrying the ligature through it; for fastening pins in roots for crowns; as a medium between crowns and roots to prevent further caries; as a protection to all roots when a gold crown is used; and, in fact, as a factor in our practice, there is nothing to fill its place.—*International.*

ARTICLE V.

MOUNTING LOGAN CROWNS.

BY J. W. HECKLER, D. D. S., BUFFALO, N. Y,

For the central and lateral incisors it is preferable to mount the crown without a band, and my method is to prepare the root in the usual way, but to cut the labial side just a little beneath the gum margin, leaving the palatine portion as long as the judgment of the operator dictates. Select a crown that will not need any grinding on the cutting edge or the sides to make it fit, as it always impairs the beauty of a Logan crown to cut the surface. Also be extremely careful to select a crown with a neck similar to that of the root. This being done, grind the crown to as perfect an adjustment to the root as possible, taking care not to grind the platinum pin, as it would materially impair the strength of the crown. If the end of the root has been properly treated and filled, it is now ready for the final adjustment of the crown.

Take non-cohesive gold foil No. 4, fold it from 80-100 thickness, punch a hole in the center with a dam punch large enough to admit the pin, place the pad of foil on the crown, trim the ragged edges almost to the sides of crowy remove and place some thin cement in cup of crown, put pad back in place, tilt patient so the cement can be placed in root canals and all the air be expelled, otherwise the air acts as a cushion and keeps crown from going to place. All this being accomplished, place the crown in position, put a soft pine stick on the cutting edges of crown, and give a few sharp raps with the mallet to drive out all surplus cement and to condense the foil. Keep the crown firmly in place for a few minutes to prevent any movement, and it is advisable to have the patient remain a half-hour to allow the cement to thoroughly harden. Then burnish the gold foil hard around the joint and finish with disks and strips as you would a filling.

A crown set in this way does not show any cement whatever, and it makes a more perfect joint than is possible by any other method. It leaves no shoulder for the lodgement of food, is perfect in shape with the root, and hermetically seals the joint.—*Dental Digest.*

ARTICLE VI.

AMALGAMS—THEIR USES AND ABUSES.

A. C. HEWITT, M. D., CHICAGO, ILL.

It needs no argument to prove to those who may chance to read this article, that dental amalgams have their uses. Nor is it necessary to argue that dental amalgams are abused. There is not a dentist by natural ability and special education equipped to practice his profession, with experience gained by an inspection of a hundred mouths, who will question either proposition. That the abuse is wide spread, and the victims to be numbered by the thousands and among the rich and educated, quite as often as with the poor and ignorant, is equally the shame and dishonor of the dental profession.

There seems to be a "Boston Rubber Conscience" governing the dialectics of many dentists, when they reason on the subject of amalgams and their uses. Their rules and modes of reasoning and practices, their logic applied (with a little more rubber) would justify the footpad and highwayman. Two cases will illustrate what I mean:

Some years since I chanced to visit the office of a leading dentist in a neighboring city. Immediately after me there came a young woman to have a tooth filled. The doctor commenced work at once, asking me not to leave. By a few strokes of an excavator, not even a "wipe out" with absorbent cotton, no antiseptic agent, no coffer dam; a lower molar was prepared for filling. Pouring some alloy in the palm of his hand from a white glass bottle, clear to the light, he amalgamated the alloy; squeezed the resultant mass between his thumb and finger, and "stuffed" the amalgam in the cavity, wiping the surplus away with his thumb, named two dollars as his fee, caressingly folded the bill paid and put it in his pocket. The proceeding did not occupy more than five to eight minutes. After the patient left I inquired, "Do you not use the dam in filling with amalgam?" "Oh, no," he answered. "I just hoe out the cavity and slap in the amalgam." I said: "But such a filling will only last a short time." "I know it, but she will come back and I will get another two dollars." I cannot write out the chuckle emphasizing the rejoinder.

Four days previous to the date of this writing, a young woman came to my office for some dental work. A brief examination revealed results of such work as just described. Eleven cavities containing plugs from what I judged to be "white alloy," and out of the eleven not one suffiiciently filled its cavity to allow successful patching. Three of the teeth had dead pulps and open fistule. I inquired how long since the fillings had been inserted. She replied "A little more than a year." Her teeth were fair sized, well formed and in good position.

Another case (an interruption while writing the last above). A young lady about twenty-two years of age, called to see if I could fill a front tooth with gold. Noting my surprise at her question, she explained that her dentist said her tooth would not hold gold. Looking at her teeth I saw two lower ones filled with amalgam. Both fillings were defective, one so much so that I easily passed a broach beside the plug to the bottom of a rather deep cavity. The other was only held in place by gravitation and wedging particles of food. I learned that the two fillings had been inserted about three months previously. They were "white alloys" amalgamated, but utterly worthless, as tooth preservatives. A strange part of her case was that the same dentist had "bridged" in a couple of superior bicuspids quite artistically and durably

But why multiply cases? I doubt if there is a dentist that will read this article but could multiply the three cases cited by almost any numeral, and then the half not be told. Dentists know that the large majority of amalgam fillings are faulty. I had almost said dismal failures as preservatives. Are they necessarily so? By no means. A careful scrutiny of any number of faulty fillings (amalgam) will reveal the cause of their worthlessness. In some portions of most of them there is solidity, close adaptation to dental walls and sufficient density. But like an anchor chain with a flawed link, they are a delusion, The fault does not lie in the alloys, bnt to the amalgamating and manipulating; the *lady*, *shiftless*, *dishonorable* and *dishonest* workmanship. Herein lies the abuse. There are honorable men in our profession whose daily and yearly work prove what I say.

Without such workers amalgam could not have driven back its enemies (pretended friends being the worst) and maintained the rank it now securely holds.

When Prof. A. O. Hunt, of the Dental Department of Iowa University, demonstrated in his clinic before the Chicago Dental Society, a few years since, that no more free mercury could be brought to the surface of his work; he gave the unanswerable argument in favor of the use of amalgams, and an object lesson revealing its abuse.

Everybody knows that free mercury is not a good preservative of tooth structure. Prof. Hunt taught how to divest the amalgamated alloys of their mercurial supersaturation and brushed aside the fine spun theories of "spheroidal tendency" of amalgam, crevicing around an amalgam filling, bulging of its surface, tendency to spherical form, ovoid tendency, etc., and demonstrated that if the superfluous mercury were gotten rid of and the mass packed so that equal density prevailed throughout and left to crystalize in that position, it would not " hump" or "globulate."

Could Dr. Hunt so condense amalgam in a tooth in the mouth without the aid of a coffer dam or some other method of dryness? If not, then no further argument is needed to point out one abuse of amalgam, namely, "submarine working." Another abuse is nearly or quite universal.—*Dental Review.*

ARTICLE VII.

TREATMENT OF PULPLESS TEETH HAVING NO FISTULOUS OPENING.

DR. C. N. JOHNSON, CHICAGO.

In the treatment of teeth with pulps dead but with no fistulous opening, where there is any doubt as to whether a blind abscess exists it should invariably be treated as if there were one. The most expert operator cannot always determine in advance whether he has a case of blind abscess or simply a putrescent pulp-canal with no complications beyond the apex, and it is only common justice to the patient to proceed in the most cautious manner. In fact, these require the most careful management of any form of pulpless teeth.

There are two principal conditions calling for treatment under this head: Where the pulps have died under fillings or in sound teeth, and where decay has exposed the pulp and caused its death. In the former the operator must drill in the tooth to gain access to the chamber and canals, and in this connection one precaution seems always necessary. Formerly these frequently resulted in much trouble to the patient and chagrin to the operator, through the fact that teeth which, previous to the interference on the part of the dentist, had been perfectly comfortable, immediately took on inflammatory action and often ran to a distressingly bad abscess. The precaution necessary to avoid such a result relates to thorough antisepsis from the very beginning of the operation. The rubber-dam should be applied before any drilling is attempted, and an antiseptic placed near at hand for immediate use the moment the pulp-chamber is penetrated. This antiseptic should be non-irritating and -non-effervescing. It should be a non irritant, because irritation either medicinal or mechanical is dangerous, and it, above all other things should not be an effervescing agent, because the very act of effervesence is too likely to force septic matter lying in the canal through in the apical space. The least disturbance we set up in the apical third of the canal at this first sitting the greater our chances of avoiding trouble, and I am much opposed to the practice advocated by various writers of using hydrogen peroxid, pyrozone, or similar agents thus early in the treatment of pulpless teeth having no fistulous openings.

As soon as the chamber is reached by the drill, it should at once be flooded with the antiseptic, care being taken not to cause any pressure on the contents of the canals. The slightest particle of septic matter forced through the apical foramen at this stage of the operation may cause serious trouble. When the antiseptic has had time to mix somewhat with the contents of the chamber, a bit of absorbent cotton or bibulous paper may be lightly applied to the opening to absorb enough of the antiseptic to admit of drilling to enlarge the opening. The absorbent will usually bring away some of the putrescent contents of the chamber in addition to the antiseptic, and when the opening is sufficiently enlarged the chamber may repeatedly be flooded, and the contents absorbed in this way till the greater part of putrescent matter has been removed from the chamber and the larger portion of the canals without causing disturbance at the apical foramen, When this process has been carried to the limit of safety, the cavity is flooded with absolute alcohol for its dehydrating effect, and this evaporated to dryness. This step in the operation seems to the writer to be of the utmost importance. It must be manifest that the dryer we get the canals the less chance there is for micro-organic life to exist, and that when an antiseptic is applied the greater will be the amount taken up by the tubuli. Care should be exercised, however, that the crown of the tooth be not heated too hot in the process of drying the root, and that it be not kept dry too long, for fear of injury to the tooth-structure through checking. It is with this possible danger that I have nearly abandoned the use of hot air in these cases and substituted the alcohol spray. It seems to extract moisture from the canals without heating the tooth perceptibly. This danger to the crown of the tooth may also be considered an argument in favor of the use of the root-canal drier whenever it is found practicable, and wherever it is felt that there is no danger of causing apical irritation by its use. When dryness of the canals is obtained, they should once more be flooded with an antiseptic, this time to remain sealed in the cavity till the next sitting. The canals are left filled with the medicament, but no cotton is forced in them at this time. A small pledget saturated with the antiseptic may be placed loosely in the chamber, and the opening closed with gutta-percha.

If the operation is carried through thoroughly and carefully, and if the putrescence seems to have been overcome by the treatment, dismissed for one week, with instructions to return at once if trouble ensues. Where any doubt is felt as to the degree of control obtained, the patient should be seen in twenty-four or forty-eight hours, and the dressing changed. At the end of a week, if no symptoms of irritation have been felt, and if the canals are sweet and clean on the removal of the dressing, the roots may be filled. Before this is done, however, the canals should first be washed out with alccohol, dried, flooded once more with an antiseptic, wiped out, flooded with alcohol, and dried. They are then ready for the filling.

Where the pulp has died as a result of exposure from decay, and the canals have for long been subject to septic influence, the same general treatment may be followed, with the one slight variation that in extensive decay, with much infected and softened dentine remaining, the softened portion may be burred out or removed with excavators, and washed away with a syringe before the rubber-dam is applied. In this way much filth may conveniently be gotten rid of by way of the spittoon without the operator coming in too close contact with it.

In treating where there are no fistulous openings, if the dressing after the first treatment shows indications that there is a blind abscess through a weeping of pus in the canal, the treatment should be continued till all such weeping stops and the abscess heals. In chronic, persistent blind abscess, where large quantities of pus flow in the canal and flood the entire cavity on removal of the dressing, the treatment is to remove all of the pus possible by absorbing with cotton or bibulous paper, and by "coaxing" with a broach. When pus is flowing in such profusion it is an indication that the apical foramen is large, and there is less danger of causing irritation by the use of the broach in this region than in ordinary canals without a flow of pus. It is therefore advisable to manipulate with the broach quite freely in the attempt to empty the abscess of all pus, and sometimes desirable to carry this manipulation to the point where pus stops and blood begins to flow. When the operator succeeds in getting a good flow of blood, he may then wipe the canal with a broach wrapped with cotton and dipped in some non-irritating antiseptic, and when the canal is sufficiently free from blood, it may be packed to the apex with cotton saturated with the antiseptic. This should be allowed to remain a week undisturbed if it causes no uneasiness. Nature should be given time to repair the injury, and nature will very often do much for us if we give her the opportunity. This is where much harm is often done by over-treatment.

If a tooth in this condition will remain tightly packed for a week without trouble, and if the canal is dry and the dressing sweet on removal, the root may be filled.—*Cosmos.*

Communicated.

THE AMERICAN DENTAL ASSOCIATION.—The American Dental Association holds its next meeting at Asbury Park, N. J., Tuesday, August 6th, 1895. I am requested by the President, Dr. J. Y. Crawford, to give notice that it is the privilege and duty of each State and Local Society to appoint and send delegates to the American Association.

Each State and Local Society which has adopted substantially the same Code of Ethics as that governing the conduct of members of the American Dental Association is entitled to one representative for every five members and fractional part thereof.

Blank certificates for delegates may be had on applica-cation to the Corresponding Secretary.

Many questions of interest will come up for discussion at this meeting, and every Dental Society in the United States should be fully represented in this, our National Convention.

EMMA EAMES CHASE,
Corresponding Secretary.

ILLINOIS STATE DENTAL SOCIETY.

The thirty-first annual meeting of the Illinois State Dental Society was held at Galesburg, May 14 to 17, 1895. About 200 were in attendance. The following named persons were elected officers for the ensuing year: President, Walter A. Stevens: of Chicago; Vice-president, C. R. Taylor of Streator; Secretary, Louis Ottofy of Chicago; Treasurer, Edgar D. Swain of Chicago; Librarian, J. R. Rayburn of Fairbury; Chairman of Executive Committee, W. A. Johnston of Peoria.

The next meeting will be held at Springfield, May 12 to 15, 1896.

LOUIS OTTOFY, Secretary,
Masonic Temple, Chicago.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The annual meeting of this Body will be held at Asbury Park, N. J. on Saturday August 3d at 10 o'clock a. m. It is very desirable that all the Colleges having membership be promptly present at that hour, as much important business will be before the Association, and the time allotted is usually short for the work to be done.

The executive Committee of the Association will meet on Friday previous at 10 o'clock at the same place. All business for that committee should, so far as possible be in their hands before the meeting in order that there be no delay.

J. TAFT, Chairman Ex. Com.

LOUIS OTTOFY, Secretary.
Masonic Temple, Chicago.

THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The annual meeting will be held in the Parlors of the "Hotel Columbia" Asbury Park, N. J., on Monday August 5th, at 10 a. m., and at other times during the week as becomes necessary between the sessions of the American Dental Association. It is important that every State Board be represented. Applications from Boards not in Membership will recieve immediate attention.

CHAS. A. MEEKER, D. D. S., Secretary.
29 Fulton St., Newark, N. J.

NEW JERSEY STATE DENTAL SOCIETY.

The twenty-fifth annual meeting (The Silver Anniversary) of the New Jersey State Dental Society will be held in the "Auditorium" Asbury Park, commencing August 1st, at 10 a. m. and continuing through Friday, Saturday and Monday a. m., closing in time for the meeting of the American Dental Association commencing Tuesday August 6th. at 10 a. m.

The "Auditorium" is the Ideal place for a summer dental meeting being situated in the Middle of an entire block fronting the surf, with large windows opening from every side in one continuous row, thirty large windows with North light for clinics and 390 x 25 feet for exhibits.

A branch of the Asbury Park Post Office will be established in the "Auditorium" and a bureau for general information with attendants constantly on hand.

The New Jersey headquarters will be in the "Hotel Columbia" with rates from $2.00 to $3.00 per day, several large Hotels have made contracts from $2.50 to $4.00 per day and smaller Hotels from $8.00 to $12 per week board.

Full particulars and rates with map of Asbury Park and a plan of the "Auditorium" will appear in the program.

CHAS. A. MEEKER, D. D. S., Secretary,
29 Fulton St., Newark, N. J.

Editorial, Etc.

CHAPIN A. HARRIS A. M., M. D., D. D. S.—During the past twenty years several attempts have been made to perpetuate the memory of this truly great and useful man, by some visible mark of appreciation on the part of the dental profession of the United States for the valuable services he rendered to the art and science of dentistry during his professional career in the city of Baltimore.

Such attempts, owing to various causes, came to naught and a movement has again arisen which, there is every reason for believing, promises to be more successful than any previous one, and which the following circular explains:

CHAPIN A. HARRIS, MEMORIAL FUND.

BALTIMORE, May 1895.

To the Dentists of the United States:—

A movement is now in progress to insure the mortuary tribute to the memory of one of the greatest names in the annals of Dentistry. It is proposed to adorn his neglected tomb at Mount Olivet Cemetery with a monumental testimonial worthy of his name and fame.

Mr. Ernest W. Keyser, the talented Baltimore sculptor now in Paris, has modelled a remarkably faithful portrait bust of Dr. Harris and executed designs intended for a monument to be erected over his grave.

It is also in contemplation that should sufficient funds be realized a memorial tablet containing an alto relievo bronze bust of Dr. Harris be placed in both the Baltimore College of Dental Surgery and the Dental Department of the University of Maryland.

It is believed that the necessary funds can be obtained through voluntary subscriptions from the Dental Profession. Snowden & Cowman Manufacturing Company of Baltimore has kindly consented to act as custodians of the "Harris Memorial fund." Contributions are earnestly solicited and will be thankfully acknowledged.

Address: SNOWDEN & COWMAN M'F'G. CO,
9 West Fayette Street,
Baltimore, Md.

Dr. Chapin A. Harris was born in 1806 at Pompey, Onandaga County, New, York. He studied medicine, removed to Ohio and afterwards settled in Baltimore, Md., where he practiced Dentistry until his death in 1860. He founded and assisted in the organization of the first Dental College in the world—"The Baltimore College of Dental Surgery"—chartered in 1839. Was for many years its Professor of Dental Surgery. He edited the AMERICAN JOURNAL OF DENTAL SCIENCE, the first of its kind ever published, from 1839 until 1860, the year in which he died—and was a voluminous contributor to other Dental and Medical Journals. He was the author of "Principles and Practice of Dental Surgery," "Characteristics of the Human Teeth," Diseases of the Maxillary Sinus," "Harris' Dental Dictionary," and edited Fox's Natural History and Diseases of the Human Teeth," with additions, etc. These books were and are widely known to the civilized world.

In 1892 Dr. S. J. Cockerille, of Washington, D. C., delivered an address before the Virginia State Dental Society, from which the following excerpts are quoted: "The time arrived when dentistry demanded an honorable place among her sister sciences, and the Baltimore Dental College sprang into existence as the natural fruit of Harris' earnest and protracted labors." "He was the first to teach that the attainment of excellence in all things connected with dentistry is not only a high moral and personal duty but is likewise an obligation imposed by the community whose bounty is enjoyed." "Considered simply as a dentist Harris was a genius." "He devoted his life to the earnest study of medical and scientific literature." "It would be difficult to overestimate the value of the services which he rendered to the cause of higher education. Every lover of dentistry owes a distinct debt of gratitude to the man." "His rule of conduct was to keep his mind unbiased by theories and speculations; never to have any wish that an investigation should result in favor of this view in preference to that, and never to attempt by premature speculation to anticipate the result of investigations but always to trust to the investigations themselves." "Harris was a hard worker and devoted all the resources of his cultivated mind to further the welfare of his profession." "With the students he was punctual, truthful, straightforward, industrious and always kind." "In his family he was forbearing and loving to his children; to his wife he was the perfection of purity and devotion." "He was more than a dentist—he was a Christian gentleman."

"Honor his memory; keep it green in your hearts and hand it down to your children and children's children to the remotest generations, making the profession a blessing to them." "We expected the great State of New York to step forward and do justice to her noblest son; she failing, we turned with anxious eye to his adopted State, the state that gave to the world its first Dental College, but we have waited in vain." "Let not the names of our great and useful men pass into oblivion."

From the manner in which this commendable effort of 1895 has already been received we feel confident that it will be successful, and we earnestly call upon the members of a profession to which Chapin A. Harris was so warmly devoted, and for which he did so much during the greater part of his earthly career, to aid in this movement by contributing according to their ability. It would require but a small sum from each of the thousands of practitioners of dentistry in this country, all of whom must acknowledge that to Chapin A. Harris is due the honor of having been among the first to rescue dentistry from the condition of a mere trade, and to elevate it to its present status. Let all of us, therefore, unite in preserving the mortal remains of Chapin A. Harris from oblivion, and honor his memory by placing enduring tablets in the two Dental Colleges of Baltimore, one of which was established by his individual efforts, and the other through his teachings. F. J. S. G.

PROFESSIONAL HABITS.—In the May number of *Blackwood* Dr, Louis Robinson treats of the mode in which external circumstances (especially professional habits) tend to mold human countenances into facial expressions which, very frequently at least, are misleading as to the chief significance of what they convey to us. For example, the tendency of a compressed lip is to suggest strength of will, whereas what it does really express is the habit of struggling against inclinations and temptations which are apt to be too strong for us; in other words, it tells, he thinks, rather of weakness than of strength, though of weakness which is training itself to be strong. According to Dr. Robinson, expression tells you not so much what a man is as what he tries to be; and as he tries to be what he is not, we constantly find him wearing a mask which conceals his weakness, through it reveals his sins.

Our countenances are marks on which the habitual attitude of the character is mirrored; but the habitual attitude of the character is not an index of the greatest strength of the character, but sometimes at least of its greatest weakness. It may tell you whether a man is "rowing hard against the stream" or rowing feebly against it, but it does not tell you where the stream would bear him if he did not row at all.

Dr. Robinson holds that as the artist, as an artist, succeeds by giving his mind up to the particular mood or feeling which he is most anxious to delineate, he very often disguises his true self by a false appearance of self indulgence. He regards the true actor's face as almost necessarily a mask, since it takes on the form of so many different emotions in turn that they counteract each other and leave a kind of neutral expression, such as extinguishes all traces of the habitual bias of the character itself.

Nothing is commoner than a complete misnonstruction of the meaning of certain countenances. Some which appear to bear their amiable drift written plainly in a genial and kindly smile, are really expressions of nothing but empty good-nature, without a vestige of thoroughgoing willingness to serve others which appears to be promised by their superficial sunshine. Other faces which are clouded and melancholy, and appear to convey the expression of covert purposes, are really expressive of high and tenacious ideas, which have never had their full satisfaction in practical life, and crowned with far less success, than those of the minds whose frank and genial surface covers a shallow and commonplace nature.

Though a merely professional blandness may excite a great deal more distrust than it ought to excite to the ear of an unpracticed listener, yet with a very little training it will learn to distinguish even in the "bland physician's" courtly voice the accent of genuineness which is more than half merged in that of persuasive and sympathetic warning. Faces are often effectual, and what is more, perfectly unintentional masks—where voices are the plainest tell tales.

ENGLISH DENTISTS.—There are 4874 registered dentists in Great Britain, of whom 3479 practice with no special qualification, but on the strength of their own declaration that they were engaged in the practice of dentistry before the passing of the recent act regulating the profession.

UNIVERSITY OF MARYLAND, DENTAL DEPARTMENT.—The Annual Commencement of 1895 was held at the Academy of Music on Friday afternoon, March 29th. The mandamus was read by the Dean, Prof. Ferdinand J. S. Gorgas.

The degree of "Doctor of Dental Surgery" was conferred upon the following members of the graduating class by the Hon. John P. Poe, Attorney General of the State of Maryland, owing to the illness of the Provost, Bernard Carter, Esq.:

Walter C. Arthur, Pennsylvania; William B. Ashbrook, Pennsylvania; A. Clagett Baker, West Virginia; Louis O. Bartlett, Cuba, W. I.; N. Grant Bowbeer, Canada; Luther D. Blackwelder, Pennsylvania; Albert L. Bumgarner, Pennsylvania; William J. Carter; Georgia; William W. Cavers, New York; J. Calvin Criswell, Pennsylvania; Benjamin F. Copp, Colorado; J. Marten Fleming, Jr., North Carolina; John S. Geiser, Pennsylvania; Timothy O. Heatwole, Virginia; Harvey C. Henderson, North Carolina; David Edward Hoag, New York; John S. Hegner, Switzerland; John Haughton Ihrie, North Carolina; Samuel J. Irvine, Texas; George Franklin Jernigan, Texas; Benedict Kritchevsky, Russia; William H. Kuich, Pennsylvania; Charles William Link, West Virginia; George H. Lyndon, Ohio; Arthur N. McKeever, West Virginia; George C. Mann, Virginia; Charles F. Matthews, California; Edgar H. Markley, Pennsylvania; Raymond W. Palmer, Virginia; Fred. L. Parker, South Carolina; D. Harry R. Patton, Nebraska; John A. Rawlinson, Brazil, S. A.; Stanley C. Reynolds, Canada; B. Franklin H. Rouse, Maryland; Louis St. Clair Saunders, Nova Scotia; George E. Starr, Maryland; J. Albert Stults, New Jersey; Edward A. Tigner, Georgia: George S. Tigner, Georgia; N. McKendree Wilson, Maryland; Cyrus A. Ward, Ohio; George N. Ward, New York; Maynard E. Williams, New York; Sheldon H. Wolf, Pennsylvania.

The address to the graduates was delivered by the Rev. Dr. O. Herbert Richardson, and the Class Oration by D.

Edward Hoag, D. D. S., of New York. The Prizes were awarded by Prof. Francis T. Miles, M. D.

University Gold Medal for highest number of votes, Timothy O. Heatwole; Honorable Mention, Geo. F. Jernigan; S. S. White Prize, Sheldon H. Wolf; Snowden & Cowman Prize, J. Sidney Couret; Dr. J. H. Marchant's Prize, Geo. F. Jernigan; Prof. Harris' Prize, L. St. Clair Saunders; Prof. Gorgas' Prize, Cyrus A. Ward; Dr. John C. Uhler's Prize, D. Edward McConnell; Dr. Isaac H. Davis' Prize, N. Grant Bowbeer; Dr. Clarence J. Grieves's Prize, Geo. F. Jernigan; S. S. White 2nd Prize, Marion N. King; E. C. Moore's Prize, John P. Best.

Students grading over 600 out of a possible 700: T. O. Heatwole, G. F. Jernigan, D. E. Hoag, G. C. Mann, W. H, Kuich, W. C, Arthur, E. A. Tigner, J. M. Fleming, Jr., W. W. Cavers, G. S. Tigner.

The whole number of matriculates for the session was 186.

THE BALTIMORE COLLEGE OF DENTAL SURGERY.—The Annual Commencement of 1895 was held at Fords' Grand Opera House, Thursday afternoon, March 21st. The announcement of the graduates was made by Prof. M. W. Foster, who also conferred the degree of "Doctor of Dental Surgery upon the following members of the graduating class:

M. H. Adams, Louisiana; J. G. Armacost, Maryland.; H. G. Baxter, New York; H. J. Boyd, New York; C. E. Brown, Virginia; S. P. Cronan, Connecticut; W. G. Dalzell, Louisiana; G. R. Dashiell, Texas; A. E. DeViney, Texas; H. R. Eavey, Maryland; K. W. Egerton, Maryland; F. W. Epes, Va.; C. H. Frink, Florida; J. G. Geiger, South Carolina; Fred. Hammond, Maryland; D. S. Henry, South Carolina; M. J. Hellwig, New York; H. Hoeper, Germany; H. W. Hoffer, Texas; E. G. Laflin, Connecticut; T. H.

Lowe, Massachusetts; J. W. Lylie, Mississippi; A. M. Marcy, Ohio; C. Meikle, New York; O. Morgan, Pennsylvania; J. B. Rousseau, Alabama; L. D. Reavis, Oregon; P. C. Richardson, Texas; L. C. Rink, Pennsylvania; W. R. Roland, Pennsylvania; W. H. Simpson, Massachusetts; G. F. Showers, West Virginia; B. M. Smith, Pennsylvania; E. M. Summervine, Pennsylvania; E. H. Sting, Ohio; W. M. Sturgis, Virginia; C. H. Theberath, New Jersey; A. C. Thweatt, Virginia; F. Waesche, Maryland; J. L. Walker, Virginia; R. H. Weiscotten, New York; E. Weymouth, Maine; G. W. Williams, West Virginia; J. H. Wheeler, North Carolina; H. White, Maryland.

The address to the graduates were delivered by the Rev. William Rollins Webb, and the class address by B. M. Smith, D. D. S., of Pennsylvania.

The Prizes were awarded by Dr. Chas. A. Meeker, as follows: Diamond Medal to H. Hoeper, Gold Medal to H. W. Hoffer, Operative Dentistry to J. L. Walker, Mechanical Dentistry to G. F. Showers, Essay on Orthodontia to J. B. Rousseau.

Prizes Given: First Honor, by Faculty, Second Honors, by Faculty; Operative, by S. S. White Dental Mfg. Co.; Mechanical, by Snowden & Cowman Mfg. Co.; Bridge-Work, by S. S. White Dental Mfg. Co.; Essay Prize, by Dr. J. N. Farrar; N. Y.

The whole number of matriculates for the session was 166.

UNIVERSITY OF BUFFALO, DENTAL DEPARTMENT.—The Third Annual Commencement Exercises were held in connection with the Departments of Medicine and Pharmacy at Music Hall in the City of Buffalo on Tuesday, April 30th, 1895. After thorough examination by the Board of Curators, including the State Dental Examining Board, the Chancellor upon their recommendation conferred the

Degree of Doctor of Dental Surgery upon the following members of the Senior Class:

Will B. Bartlett, Charles Frederic Bunbury, Gerald Griffin Burns, Charles Alexander Bradshaw, Fred Ellsworth Cloud, Thomas James Dorland, Charles Edwin Flagg, Frederic Jacob Gieser, William George Gowland, Perry Charles Hammersmith, Frank Lewis Haynes, Albert Heinrich, Lott Myron Howder, George Lintner Hussong, Harry Bestow Huver, Lloyd Starr Ingalls, William Erastus Jenney, Clint Wood La Salle, Charles Thomas Lewis, John James Madden, Henry James McLellan, Alfred Edward Mimmack, Bertram Amos Moyer, Thomas Clarence Phillips, Miss Annette Rankin, Albert Boniface Rieger, Frank Mills Rowland, John Wesley Steele, Harry George Tripp, Burdett Washington Whipple.

The whole number of matriculates for the session was 160.

Bibliographical.

THE ANATOMY AND PATHOLOGY OF THE TEETH. By C. F. W. Bodecker, D. D. S., M. D. S.—With three hundred and twenty-five illustrations. Publishers: The S. S. White Dental Manufacturing Co.

Among the valuable contributions to the literature of the science of dentistry, this work of Dr. Bodecker will occupy a most prominent place, and be accepted by the dental profession as a clear and comprehensive teacher on dental pathology.

It abounds in original investigations by the author on subjects of the greatest interest to the dentist, together with those of other dental scientists who have, like Dr. Bodecker, been the pupils of Dr. Carl Heitzmann.

Dr. Bodecker in this work adopts the views of Dr. Heitzmann concerning the cell-theory, and believes that at no distant day the novel views of his preceptor and teacher, which are entirely antagonistic to that theory, will gain a final victory.

This valuable work of Dr. Bodecker begins with a description of the superior and inferior maxillary bones, the teeth, their articulation and general anatomy. The general histology of the teeth follows, and includes a number of chapters in which this subject is treated in a manner which establishes the high intellectual acquirements of the author and his untiring zeal and devotion to microscopical investigation and study. This portion of the work also abounds in beautiful illustrations of the minute structure and development of dentine, enamel and cementum. Faulty tooth-structures also receive careful attention, followed by the histology and structure of the dental pulp, the pericementum, absorption of temporary teeth, the physiology of the hard dental tissues.

The pathology of the teeth is then referred to, beginning with the general diagnosis of the diseases of the teeth, irritation and new formation of dental tissue, secondary dentine, mechanical abrasion, erosion, reaction of the dentine upon fillings, hyperostosis of roots of teeth, inflammation of gums and of dentine, pulpitis in its clinical aspects and morbid anatomy, degenerations and atrophies. The chapter on pericementitis is an exceedingly interesting and instructive treatise, referring to its clinical aspects and morbid anatomy. The chapter on caries of the teeth is a very excellent treatise of this subject and worthy of careful perusal. The effects of arsenic upon the pulps of the teeth follows, together with necrosis of the jaw-bones, empyemia of the antrum, clinical and anatomical features of tumors, especially tumors of the teeth and jaws, and cysts in the oral cavity, the contents of this work ending with malformation and mal-positions of the teeth.

While some may adhere to the cell-doctrine or theory, and others may regard some of the subdivisions of pericementitis, for example, as strictly characterizing advanced stages of this affection which should be classified under alveolar abscess, etc., yet all must admit that the subject matters embraced in this voluminous treatise have been treated in a manner worthy of universal admiration. This work comprises 676 pages, and the many excellent illustrations add very much to its great value and comprehension.

TAKING IMPRESSIONS OF THE MOUTH.—By James W. White, M. D., D. D. S. Publishers: S. S. White Dental Manufacturing Co., Philadelphia. 1895.

A second and enlarged edition of this valuable work has been published, and its contents comprise information of the most useful kind relating to the importance of a correct impression, conditions of the mouth, selection of the tray, and impression material, nature and manipulation of the different substances employed as impression materials, preparation of the mouth, special cases, partial cases, etc., etc. No treatise on this subject is as complete as this work of the late Dr. White, and the present revision has added greatly to its value.

MANUAL OF CHEMISTRY.—A Guide to Lectures and Laboratory work for Beginners in Chemistry. A text-book specially adapted for students of Medicine, Pharmacy, and Dentistry. By W. Simon, Ph. D., M. D., Professor of Chemistry in College of Physicians and Surgeons, etc., etc., Baltimore. Fifth edition, thoroughly revised with forty-four illustrations and eight colored plates representing sixty-four chemical reactions. Publishers: Lea Brothers & Co., Philadelphia, 1895.

The steadily increasing demand for this valuable and comprehensive manual of chemistry stimulated the author to prepare this new edition, and the manner in which he has performed such a duty is highly commendable, and the result is a work which is worthy of all praise for its completeness and excellence. The old classification of metals and non-metals, organic and inorganic compounds has been retained, for the reason that it is well adapted to the instruction of beginners in chemistry.

This work is also a most useful one to students of medicine, dentistry and pharmacy, for the reason that it furnishes an admirable selection of material bearing upon the laws and phenomena of chemistry under seven main divisions, treating respectively of the fundamental properties of matter, the principles of the science, the non-metallic and the metallic elements and their compounds, analytical, organic and physiological chemistry. Every one interested in chemistry will appreciate the value of the colored plates of reactions, which give a permanent and accurate series of standards for comparison of tests.

In medical and dental practice, important pathological and toxicological questions depending on the text-tube may with certainty be referred to this series of colors and color-changes.

GENERAL SURGERY AND PATHOLOGY FOR DENTISTS.—By Edmund W. Roughton, B. S., M. D., F. R. C. S., London, England, Warden of St. Mary's Hospital, etc., etc. With numerous original illustrations. Publishers: J. P. Segg & Co., 289-291 Regent street, London, Eng.

The author of this work of 134 pages announces that its object is to supply the student of Dentistry with an account of General Surgery and Pathology sufficiently comprehensive to enable him to practice his profession intelligently, yet concise enough to be easily mastered whilst preparing for his examination. The contents include Inflammation and its results, Bacteria in relation to disease, Wounds, Surgical fever, Shock-delirium, Hæmorrhage, Fractures, Syphilis, Tuberculosis, Tumors, Cysts, Diseases of Arteries, Diseases of Veins, Injuries and Diseases of Nerves, Diseases of Lymphatics, and Diseases of Bones. Much valuable information can be obtained from this work, the style of which is concise and comprehensive. There is every reason for believing that it will prove serviceable to the dental student, and also a means of ready reference to the dental practitioner.

CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY FOR 1894.—Since the first number of this work appeared, that for 1880, it has been a welcome annual visitor to the profession. The present number is an improvement upon its predecessors; in fact each year's edition has shown a marked improvement in not only the size but the nature of the contents of this work.

Dr. Catching is to be congratulated for the success of his endeavor to produce such a digest of the contents of the journalistic literature of the dental profession.

B. H. Catching, D. D. S., Editor and Publisher, Atlanta, Ga.

MARCHAND ON PEROXIDE OF HYDROGEN, GLYCOZONE AND HYDROZONE.—The therapeutical applications of Peroxide of Hydrogen (medicinal), Glycozone and Hydrozone; by Charles Marchand, Chemist. Ninth Edition.

This book of 200 pages, which contains all information on the subject, with reprints of elaboeate articles by leading contributors to Medical Literature, will be mailed to doctors mentioning this publication,

Send full address to Charles Marchand, 28 Prince St., New York.

Monthly Summary.

RATIONAL THERAPEUTICS OF CHOLERA INFANTUM.—BY GUSTAVUS BLECH, M. D., St. Louis.—No strict rules can be given for the treatment of disease. It is for this reason that so many physicians say we do not treat a disease, but we treat an individual. True enough, we treat the individual, but what we have most of all to consider is the disease. The individual will dictate us alterations and modifications in our treatment.

A general plan of treatment may be outlined, however, and I will try to do so in regard to one of the most fatal diseases of babyhood—cholera infantum. There is a certain philosophy in therapeutics which I would frame in the three following rules: First, remove if possible the disturbing causes; second, treat symptoms which *per se* are liable to endanger the life of the patient; and third, sustain vitality.

As said before; the therapeutics, which is based upon the ætiology and pathology of a given case is the only one to be employed.

Now, the ætiology of cholera infantum is not so obscure as asserted by a good many authors. Whether or not of microbic origin, one thing is sure—it is due to a chemical decomposition of food, causing an inflammatory condition of the digestive and alimentary canal.

Clinical experience, furthermore, shows that this disease is of a grave character, producing death in a large proportion. Heat *per se* is not the immediate cause of this disease, but it influences its course considerably. Therefore, gastric or intestinal disturbances in summer demand a closer attention than those which occur during the colder season. Cholera infantum is a disease met even in the palaces of the rich, although not so often as in the tenement houses of the poor, which fact proves again that bad air, filth and lack of ventilation are also of a predisposing influence, as well as an obstacle to a quick cure. The mortality in the tenement houses is larger than that of the richer parts.

If we consider the aforesaid, we shall first of all, as regards the treatment of this disease, have to restrict diet.

As soon as called to a case of cholera infantum, prohibit for the first day any food whatever. Mothers have no right to nurse the little patient either. Strict instructions must be given in that direction, because the timid mothers are often inclined to quiet the crying babies by putting them to the breast.

Remedies are of very little value. Beginning with calomel, salol, and all the newer antiseptics, finishing with subnitrate of bismuth—they have all proved a failure, for none of them work quickly enough.

The treatment as outlined by Dr. Elmer Lee, of Chicago, in his cases of typhoid fever, proved a success in my hands during last summer, and under this treatment I have lost only one patient out of twenty-three, while the monuments of my skill exercised during the year 1893 are decorating the cemeteries of the State of Connecticut

So far as I knew, the best antiseptic (which has also a strong tendency to reduce local inflammation) was peroxide of hydrogen (medicinal) until hydrozone was used by me. Hydrozone being twice as strong as Marchand's peroxide of hydrogen, (for economical reasons) the latter drug is preferred by me. This remedy can be administered internally as well as externally.

I add a tablespoonful of hydrozone to a pint of water for washing out the stomach. The vomiting ceases after the first washing as a rule. If necessary, this procedure can be repeated. If the vital power of the little patient is not too low it can produce no harm. But in every case, no matter how far advanced, I do not omit an irrigation of the bowels, for which purpose I use a soft rubber catheter attached to a common bulb syringe. The catheter is introduced as high in the colon as possible. It is unnecessary to say that the water must first be sterilized. I do not agree with Dr. Lee in using hot soap water. On the contrary, I use cold water, and add to each quart about two ounces of hydrozone. The improvement after the first or second irrigation is marked. If necessary, these irrigations can be repeated every two hours.

Among other remedies there are only two to be employed, morphine and strychnine. Both ought to be administered hypodermically. Their indication is too well known and they are about all we need. No antipyretics should be given. If the fever is very high and if the irrigation of the bowels does not redue it, the whole body should be washed with alcohol.

The diet for the next twenty-four hours should be very light indeed. Sweet, strong Russian tea is all I allow.

Each individual case will teach us when food can be allowed again.

Since the adoption of this mode of treatment I have met with the most remarkable success, and no honest practitioner should refuse it a trial.

To be successful in filling teeth with gold, be sure to have your undercuts filled. To do this, small pieces of gold must be used to start the filling, large pieces do not fill them as solid as the foundation of a filling should be.—*Traveling Dentist.*

HORACE WELLS ANNIVERSARY PROCEEDINGS.—The chairman of the executive committee of the Horace Wells 30th Anniversary Celebration, announces that the papers read by Profs. Fillebrowne and Garrettson at the meeting, and the speeches delivered at the banquet have been prepared for publication in the proposed Souvenir Volume, and will be issued upon the receipt of a sufficient number of subscriptions to cover the expense. Price $1.50.

The undersigned will receive subscriptions, receipt for same, and deliver the book upon completion.

J. D. THOMAS, Chairman.

THE FIRST PERMANENT MOLAR.—Dr. Palmer, of Janesville, Wis., in a paper before the Wisconsin State Dental Society, has some very pertinent thoughts on the first permanent molar. Although this tooth, from its size, perfection of outline and position in the jaw, is the most important, yet it is the worst treated of any tooth in the mouth. Owing to the extraordinary strain on the system of the child during the growth of this tooth, it is generally inferior to the others in structure, and parents hold more wrong ideas of it than of all the other teeth combined. The extracting of this tooth is a fruitful source of arrested development of the alveolar ridge and subsequent irregularities. The tipping forward of the second molar which follows extraction of the first, causes a very serious alteration in the articulation, and the anterior teeth suffer as a consequence, being pushed out of position, changing the whole expression of the face. Again, the removal of these teeth will cause the eruption of the teeth anterior to them to be retarded, as the occlusion of the jaws should come on the first molars. Dentists should impress upon their patients at every opportunity the importance of attention to these teeth.—*Dental Record.*

FOR VERY SOFT TEETH.—By T. B. Welch.—To harden the dentine under a cement filling, rub on a little tannin made into a thin paste with oil of cloves. Fill with oxiphosphate. The softened dentine soon becomes "tanned" and a permanent covering is made for the pulp.—*Items of Interest.*

A LIQUID WHICH WILL MIX ALMOST ANY CEMENT FILLING.—Metaphosphoric acid glacial in sticks, 1 oz., dissolved in aqua dist. 3 ozs. Cork the bottle firmly, and let it stand for twenty-four hours. Then put the liquid in an evaporating dish, and let it boil over a medium gas-jet for about five or six minutes; fill in a well-corked bottle, and when cooled down it is ready for use. This liquid will always remain clear,—*Dental Weekly.*

WATER CURE.—Water can cure more people by far than is generally supposed. Water is able to create a centrifugal power and aids in the elimination from the body of effete material. No surgeons can ever make such an opening as is made by nature when supported by water. In this way, I often think that though such small operations as are done by dentists on structures of low vitality are indispensable, yet the therapy of all oral diseases of inflammatory character may be materially aided by water treatment. For instance, if we wish to get rid of effete material in a root canal, it would be a good method to introduce something, such as linen fibers soaked with water, which creates a centrifugal power and helps to remove it. It would then be cleaned. A root canal can not become clean by introducing drugs and leaving behind effete material. Sterilization is not so perfect in the removal of such material as the centrifugal power created by the proper application of water.—Dr. H. Block in *Items of Interest.*

WHITE FILLINGS.—We hear that New York dentists have almost ceased to put gold in the mouths of ladies o fashion. Unless the filling is quite out of sight, most of them prefer to have the best white filling used, and to then visit the dentist often to have it renewed as it wears away. A fortune awaits the person who will find a white filling that does not wear away.—*Dental Weekly.*

CINNAMON DRINK FOR FEVER PATIENTS.—Cinnamon tea is recommended by a Southern physician as a valuable drink in fever-affected districts. It possesses an especial virtue against typhoid fever, and essence of cinnamon is said to be one of the best of disinfectants to use in the sick room of a typhoid patient.—*Items of Interest.*

ENGLISH DENTAL EXAMINATIONS.—Mr. Thomas Gaddes, of Harrogate, has been writing to the *Lancet* on the dentist's education, and urges the Royal College of Surgeons of England to lose no time in effecting improvements in the nature and scope of its dental examinations. He says:—The examinations of candidates for the L. D. S. of the Royal College of Surgeons of England has long been a grievance with dental teachers. Beyond the introduction of the 'practical' portion in 1879 no other improvement of any moment has taken place in the examination since 1872, when written papers were given to the *viva voce*. All the other licensing corporations—Edinburgh, Glasgow, and Dublin—have their primary and final examinations at two periods of the dental student's career. But in this matter the Royal College of Surgeons of England remains stationary, apparently fixed, notwithstanding the utterances of teachers and others, many times repeated from 1879, urging that the examination in the general subjects of the curriculum—at all events, anatomy and physiology—be taken at a different time from that of certain of the special subjects—dental surgery, &c. Not only would such a division of the examination reduce the tendency to 'cram' which the existing single examination in all the subjects fosters, but the onus of preparing the candidates in anatomy and physiology would rest upon the teachers of those sciences at the general medical schools, and not, as heretofore and at present, upon the tutors of the dental school—a preposterous anomaly which ought not to exist."—*Dental Weekly.*

TO REMOVE REMNANTS OF PUTRESCENT TISSUE IN ROOT-CANALS.—By C. N. Peirce.—Force trichloracetic acid into the canals. It destroys all tissues and purifies in a few moments' time.—*Items of Interest.*

RUBBER dissolved in chloroform is one of the most useful articles in the laboratory for repairing cases.—*Dominion Dental Journal.*

SOME time since a merchant came into my office bringing an orange some one had bitten into.

"Doctor," said he, "can you tell who bit into that orange?"

"Yes," we said; "it was a young man for whom I am making a part set of teeth."

"Can you swear to it?"

"Yes; here is the articulation I took of his mouth only yesterday."

"What was his name?"

"Joseph Fairbanks."

The articulation fitted the bite into the orange precisely. The left lateral was turned; the right cuspid was prominent, and the right central I was to restore, was absent.

While the family were at church he had broken into the house and stolen money and other valuables. The orange was one of three left on the center table, too sour to eat.

He was convicted and sent to prison.—Editor *Items.*

TO BLEACH A TOOTH.—By Dr. Meeker.—Apply caustic pyrozone by means of bibulous paper twisted on a gold probe. Move it around in the cavity, throwing on a current of air to hasten evaporation.—*Items of Interest.*

SHEEP WITH GOLDEN TEETH.—On the teeth of sheep and other ruminants, a metallic shining covering is observed. In Germany the occurrence is rare, but in southern countries, like Sardina, Sicily, Creta, Greece, Syria, Mesopotamia, Persia, Egypt, etc., it is more frequent. There the covering is considered as real gold, and gave rise to the tradition that the sheep owe their "golden teeth" to a wonderful plant, 'gold cabbage."

This plant shines at night and possesses charming powers. It is known among the Greek shepherds as lampidonia, *i. e.*, the illuminating. There is a tradition that wise men know how to obtain gold from the gold cabbage,

The most curious thing about the matter is that the shepherds asked the learned men to find that gold cabbage for them. As to the gold shining covering of the sheep's teeth, different examinations have imposed the conclusion that it is a sediment from the saliva, and therefore a metal shining tartar.

ROOT-CANAL FILLING.—Make a saturated solution of aristol in chloroform. Having cleaned and dried the canals, with a dropper fill with the aristol solution and quickly introduce a gutta-percha point in each canal. Simple, efficient and inexpensive.—*Georgia Practitioner.*

FACIAL PARLAYSIS.—The conclusions drawn from the observation of eighty cases of facial paralysis by Dr. Rudolph Hatschek are detailed in the *Jahrbuch fuer Psychiatrie und Neurologie.* A short summary of the paper appears in the *Neurologisches Centralblatt.* Among the eighty cases were ten in which more than one attack had occurred. Sometimes one side; sometimes both sides were affected, and more than once there were third attacks. There seemed to be no tendency for one sex to suffer more than the other, and there was no preference for one side of the face over the other. As a rule the latter attack was more severe, but not invariably so. Two of the cases occurred in patients the subjects of diabetes; one occurred in a patient at the commencement of the secondary manifestations of syphilis. One case of double facial paralysis occurred in a boy eight years of age after mumps; in another patient, a lad of seventeen years of age, an attack of right-sided facial paralysis succeeded to sore throat with pyrexia. It is also mentioned as an interesting fact that during an epidemic illness (apparently influenza) at Brest facial paralysis was one of the recognized symptoms.—*London Lancet.*

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ARTICLE I.

AMALGAM—ITS USE FROM A PRACTICAL STANDPOINT.

BY DR. W. E. HASLEY, BROOKLYN, N. Y.

Read before the Second District Dental Society of New York State, Feb. 11, 1895.

The writer says that dentists should know the metals and their relative proportions when combined, so that, if satisfactory and pleasing results are obtained from the use of a certain alloy, the reason may be known; and if the opposite is the case, that the fault may be corrected. The best way to prepare an amalgam mass is by combining the alloy and mercury by weight; having first experimented until the correct proportions are obtained. The ability to use zinc phosphate and contour amalgam in combination is only acquired after considerable practice and a thorough knowledge of the working qualities of each. The powder and liquid of the zinc phosphate are placed on the slab ready for mixing, an excess of the powder being assured. The alloy and mercury of the quantity desired are weighed out in such proportions as are known to make the desired mix, placed in the mortar and triturated to amalgamation, removed to the hand and kneaded into thorough homogenity, which is quickly done, as the mass should be of decided plasticity. The amalgam is retained in the hand, the warmth of which will retard setting while the cement is being mixed. The cement should be plastic enough to allow of lining the walls of the cavity with a considerable bulk. A portion of amalgam, of about equal consistency, is quickly placed in contact and interdigitated into the cement in such a way as to cause the cement to dome in the center of the crown, and also to crowd toward the outer edge of the cavity. In this way a very strong foundation is obtained, the weak walls strengthened and a good color secured. As the cement hardens the enamel edges are cleaned of it, and the building up and contouring with amalgam continued. A number of mixes are necessary, and the last additions are thoroughly wafered, which allows of perfect contour-work, enabling the cutting away of any surplus, and the easy addition where necessary.

Gutta-percha is recognized as being a perfect non-conductor, possessed of good color, easily worked, and more nearly approaching perfect compatibility between filling and tooth-bone than any other material in the whole list, and therefore ranking first as a preventive of recurring decay, but its total lack of edge strength limits its use as a filling to those cavities which are not exposed to attrition. Zinc phosphate is possessed of excellent color, does not shrink, has great adhesive power, and is comfortably worked. It is not to be used in close proximity to a vital pulp, nor is it to be relied upon as a permanent filling, as it is subject to more or less rapid disintegration when exposed to the fluids of the mouth. Amalgam possesses all the edge-strength needed, resists attrition and the oral fluids, is so readily worked as to permit of any extent of contour-work, even to the entire replacement of a lost crown on bicuspid or molar roots, and has a desirable degree of compatibility when in contact with dentine, as is evidenced by its tooth-saving quality. However, it lacks proper color, is a conductor of electricity and thermal changes, and shrinks, bulges, and spheroids in proportion to the low grade of its alloy and the excess of mercury contained.

As a typical example, a superior second bicuspid is presented which we desire to save. The patient is young and the tooth-structure soft and frail. The whole approximal walls are lost by decay, also a large portion of the grinding surface; the fissure also is decayed deeply, uniting the approximal cavities, which are partly filled by hypertrophied growth of gum-tissue. At the first sitting the cavities are syringed with warm water, and carefully packed with cotton saturated with oil of cloves or camphophenique, to crowd out intruding gum-tissues, secure slight separation, and obtund sensitive dentine. At the next sitting the bicuspids and first molar are placed under the rubber, the edges being carefully tucked under the gum with a thin scaler without the use of ligatures, and the cavities dried. The enamel edges are carefully trimmed, conserving all that will be consistent with zinc phosphate as a liner and strengthener. The decay is carefully removed from the circumference of the cavities, and, if sensitive, obtunded with oil of cloves, eugenol, or camphophenique, avoiding any of the escharotic agents. A considerable portion of softened dentine is conserved over the region of possible pulp-exposure, and carefully protected with a thin wafer of low-heat gutta-percha, which is easily placed by picking it up with a warmed instrument touched to the wet stopper of the cajuput bottle, warming slightly over a spirit lamp, placing accurately in the cavity, and pressing the edges into apposition. The oil of cajuput softens the gutta-percha just enough to cause adherence, and also acts as an obtunder.

The first demand for the salvation of such a tooth, when the cavities are prepared, is pulp-protection; and for this gutta-percha is selected without hesitation, three wafers being necessary, one in each approximal cavity and one at the bottom of the fissure.

The second need is to guard against recurrence of decay at the cervical margin, and submarine amalgam is used, being built down to a line with the gum festoon, the last portions wafered and the edges carefully trimmed with a very thin sickle scaler. The hardening by wafering and the careful trimming and finishing of this portion of the filling at this time is a very important point, as it never afterward can be so well and easily done. The third need is the strengthening of the frail enamel-walls and the prevention of their discoloration. Zinc phosphate ranks first in these desirable attributes, and may be used in combination with the amalgam while both are plastic, or simply as a liner mixed to a plasticity which will allow of easy and thorough adaptation to the cavity-walls with a small ball burnisher, occasionally touching the instrument to an oil-pad to prevent adhesion of the cement. And now the conditions call for a material possessed of excellent edge-strength, resistive to attrition from mastication, and of good color. Contour amalgam, when properly inserted, fulfills these conditions most admirably. Amalgamated with sufficient mercury to render the mass plastic, the first piece is placed in apposition to the previously-inserted submarine amalgam in the distal cavity at the cervix, and tapped into thorough amalgamation; each succeeding piece is inserted and tapped (not burnished) into homogenity until the distal cavity is wholly filled, contoured, and extended into the fissure; the last portions are wafered, and the lost contour is carefully restored. The mesial cavity is filled in the same manner, uniting the two fillings in the fissure. The wafering must be thorough, rendering full contouring and finishing easy, therefore insuring a minimum of shrinkage and strong edges. Such a combination filling must appeal to us all as fulfilling its mission of tooth-salvation; the pulp is protected from all outside influences; the weak walls are strengthened and color is maintained; the recurrence of decay is guarded against by a coppered amalgam at the cervical wall, and the lost contour restored. The result is a tooth of good temperature, with a prospect of years of comfortable service.—*Dental Cosmos.*

ARTICLE II.

BLEACHING TEETH BY ELECTRICITY.

BY DR. ALBERT WESTLAKE, BROOKLYN, N. Y.

The writer describes the cataphoric effect of using pyrozone twenty-five per cent. solution in restoring the normal color of teeth in a few minutes. The same appreciation of current, strength and resistance must be considered as is used in cataphoresis on live dentine for cocainizing. * * * Mrs. A. Nervo-bilious temperament, presented right inferior incisior very darkly discolored, a proximal cavity, and incipent abscess. After carefully adjusting rubber involving teeth on both sides, I cleaned the cavity, opened canal, and removed the pulp; then passed a few shreds of cotton saturated with warm salt water in its place, after which I filled the cavity with pure absorbent cotton saturated with pyrozone twenty-five per cent. solution ethereal, and applied the positive pole galvanic current, in the shape of a needle, to the moist cotton, and placed the negative pole in the patient's right hand, repeating this three times as the cotton dried. I commenced with four, and increased to about twelve cells, when the tooth began to appear white in patches about the neck and half-way up the crown; this half of the tooth soon presented a bleached condition in sharp contrast to the biting-edge. I then transferred the negative pole and made a short circuit through the upper part of the tooth, after having cut a narrow ridge through the enamel of the biting-edge. I then filled the root-canal and cavity, and the biting-edge with gold. The tooth in other respects still retains a perfectly normal appearance. This first experiment in cataphoresis for bleaching took place on Friday, March 8. The bleaching did not occupy more than ten minutes. The additional cataphoric effect on the periosteum and adjacent tissue was beneficial, as the tooth is perfectly comfortable at the present writing, three days after the operation. * * * Miss T. Nerve-sanguine temperament; left superior central incisor had been treated and an attempt made at bleaching the tooth by a dentist in New Jersey. I removed the gold filling, and found that the tooth presented a dark straw-color. I applied the same method of application, but omitted cutting the biting edge. I found the cavity in this tooth much larger, but as the canal was filled with cement, the resistance was greater, and more current was necessary. I continued the application too long, and secured too great a bleaching effect. I filled the tooth temporarily with gutta-percha, but will blend the extremely bleached appearance by inserting a lining of cement.—*International Dental Journal.*

ARTICLE III.

THE DENTAL LABORATORY.

THE USE OF TOOLS.

Nothing more conclusively shows the difference between a good experienced workman and a novice than the manner in which he uses tools and other appliances, in the dental as well as any other work-room. Not only is this apparent in the handling of the same while doing his work, but it is also in a more marked degree shown by his improper selection of tools for purposes they are not intended for.

The rougher portions of our work will here be referred to more particularly, the writer having found, from experience of student life, that it is in this section that one has to look for the most damage. For example, in drawing wire, instead of using a pair of draw-tongs, a small pair of pliers is taken, a strain is put on the handles greater than they are intended to bear, and as a consequence one of the blades snap off. Again, a small pair of nippers, sufficiently strong for cutting ordinary dental plate, is used to cut something three times as thick, perhaps a tooth on a zinc model. What is the consequence? A fracture. Another instance occurs while drawing wire; it is not dried after annealing, or the draw-plate is put in a damp place, and not properly oiled after use; it thus becomes rusty and inaccurate. Again, while rolling gold, the ingot of metal is not cleaned from flux, or is not dry; as a consequence, a valuable set of rollers is spoilt in a very short time.

Tempered broaches are used as if they would bear any strain and are frequently broken the first time of using.

These are some of the abuses of the use of tools, and all of them could be avoided, if one were only to think for a moment that if great force is to be employed it requires a strong instrument, or tool, in proportion. Accidents will happen sometimes, but with a little care and thought, such as have been named, can be avoided.

The tools and appliances in the laboratory should be kept in a state of efficiency. New saws in frames when required, sculptors sharp, and drills in good condition. All these matters should be attended to directly; work is slack, or there is idle time; by these means, when busy again, one is able to go on with the work with comfort and despatch.

In conclusion, it should be mentioned that all tools, lathes and appliances requiring it should be kept clean, bright and well oiled, either with vaseline or goose-grease; both these being lubricants that do not thicken or get sticky.

To clean lathes, etc., when dirty, they should be rubbed with paraffine oil.

WORK-ROOM ECONOMY.

To study economy while doing his work is one of the earliest principles that should be instilled into the mind of the young beginner, and he should be taught to so habituate himself to carry out the necessary details that in time it becomes natural to him to do so without an effort.

Foremost among the many channels of waste in the dental work-room is the gold drawer; this should be provided with a hare's-foot or a large badger-hair tooth-brush, that being much softer than the ordinary ones.

When gold is being filed, the drawer should be kept wide open, so that, if a rough file is being used, the small particles of gold do not fly over the edges of the drawer.

Now the drawer cannot be kept properly open if the workman sits too close to his bench-pin; therefore this part of his education should not be neglected. Again, too great stress cannot be laid on the fact that the gold drawer is not the place for tools of any kind.

If files are used, a slight tap on the bench-pin will detach any loose filings that may be adherent to them, and then they should be placed on the bench in front of or at the right side of the work-man.

Should they be put in the gold drawer, particles of gold attach themselves to the handles, after they have been in the warm hand, and if they are not brushed clean each time, before using again, (which in itself is a waste of time), considerable losses of gold will take place.

Drills and broaches should be passed through the brush also, and all work after filing, as well as the bench-pin, should be brushed before placing the case on the model pain.

By attending to these apparently small matters, a considerable saving will take place in the course of a twelvemonth. With all one's care it is impossible to avoid some waste, but one can account for a large percentage of it, by carefully saving all the dust that collects on the bench, the dirt off the floor, the old rags that one uses for wiping cases, all the sediment that collects in the water-troughs of the lathes, all the washings of the hands after polishing cases. All these small matters may be overlooked by the inexperienced beginner, and thrown away. The author does not advocate keeping these "sweeps," as they are called, separate, as it entails much extra work, which in the long run does not pay. When a sufficient quantity, say a good-sized barrel full, has been collected, it should be sold to some respectable refiner. To obtain information on this point, it is as well to consult some old dental friend. The author's experience is that refiners are not all alike, in the way they treat their customers. A notable example of this was brought under the writer's notice quite recently. It was a case in which for six or seven years the average for the floor "sweep" did not amount to a pound per annum. On the recommendation of a friend, a new refiner was tried, with the result that a cheque for nearly eight times the former amount was received. Taking into consideration that the average of work was about the same, one must naturally conclude that there must have been something wrong somewhere.

Another important consideration is in the consumption of gas, for one may find it flaring away, not only before, but long after it has served its purpose; this not only represents a money loss, but it also tends to vitiate the surrounding atmosphere, and is detrimental to health.

Again, one might mention the waste that takes place with use of plaster of Paris. This might be avoided if one noticed the amount of plaster necessary for each operation; in a very short time a fairly accurate idea would be gained of the amount required; and much waste would be avoided.

Now we arrive at another important item, and that is, a loss of time.

Speaking of this, we do not wish it to be understood that we would curtail the time necessary to do the work effectively and well, but, on the contrary, would allow the maximum time if it ensured the work being more perfect. But a great amount of time is lost, especially with the young beginner, in not rectifying an error at once. For instance, if a clasp does not please us by its fit or shape, or if the position of a pin, for a tube tooth, does not seem to us quite as it should be, it is quite as well to get into the habit of altering it at once, than by thinking over it and so lose more time than it would take to make the necessary alteration two or three times over.

Then again, the workman should always "be doing." If he is waiting for the plate to clean, or the case to cool, he can be going on with the clasps, backing the teeth, or putting his tools into an efficient condition. This is the great secret of rapid working.

While we would advocate diligence in the work, we would at the same time point out that it is not the noisy workman who gets through the most work. Noise is a thing that should on every occasion be avoided. Much noise may be prevented when any hammering has to be done on the bench, by resting the anvil, or block, upon a bag of sand or a thick layer of rags. Swaging up the plate with the model resting on the bench should be considered a gratuitous annoyance to everyone in the work-room, and is to be condemned, considering how easy it is to avoid it.

The use of the dental engine in the laboratory: The importance of this appliance in the work-room cannot be over-estimated, and if used in a careful and intelligent manner, it will last a considerable time without getting out of order.

For fine-fitting tube teeth to a plate, for letting down a crown or pivot tooth on to a root, for such fine operations as fitting porcelain facing to bicuspid crowns, it has no equal; the minute wheels, cones and sticks of carborundum which can be used with it enable one to produce the most perfect results.

Again, for repairing split vulcanite cases, after making a little plaster model of the palate of the case, a fissure bur in the engine can be used to produce a new clean surface to the edges of the fissure, by first of all running the bur through the plate and drawing it from one end of the split to the other, after which lateral cuts can be made on each side for the further strengthening of the new rubber.

For hollowing out spaces in a rubber plate for the introduction of a strengthener, for easing cases over roots; for removing the drugs on rubber cases corresponding to the necks of the teeth, a large rose bur is most suitable and does the work neatly and well.

For removing a tooth or gum block from a case, a small bur can be used to work around the pins and remove the block without damage to the case.

For polishing the inside of gold plates, clasps, and round about the backs of the teeth, also in the indentations of the rugæ, the engine can be employed with effect, as the extremely small appliances used with it can be introduced into the most constricted space.

One is also enabled to mount a small circular saw, which can be used as well as a wheel for removing a metal back from a plate.

These are a few samples of the uses the engine can be put to, and for which it is especially adapted.

To make the little chucks to carry the small wheels, etc., a piece of round polished steel wire is obtained the same thickness as an engine bur. The wire is nicked deeply at suitable lengths with a file, and snapped off, and then the ends are filed smooth.

These pieces are held very firmly in a Hodge handpiece.

We now take some German silver tube that will just fit the wire, Cut the tube into lengths, of an inch long, and file each end level. We must next slip one of these tubes onto the wire, leaving the end protruding about one-eighth of an inch. We solder the tube to the wire with silver solder. By this means a shoulder is formed for the wheel to rest against.

A porte-polisher for carrying points of corundum, or carborundum, can also be very simply made, by soldering a tube on to the steel wire, letting the end of the tube project about half to three quarters of an inch. This projecting portion can be tapered a little and split. To fix the carborundum point, melt a little shellac into the tube, then make the carborundum point hot, and press it into the melted shellac.

THE MATERIALS USED IN THE DENTAL LABORATORY.

These may be grouped in the following order:

For moulding in sand; Sand or loam, pumice, brick-dust, French chalk, lycopodium and common resin.

The latter is used to give a carbon surface to a sand or other cast. A stick of ordinary firewood is taken and either dipped into melted resin, or the resin is melted over a flame and dropped on to the wood. It is then set alight, and holding the sand mould over the smoke of the resin, the surface of the sand is coated with a black deposit in a few moments. By coating the sand or other mould in this manner a better surface is obtained to the resulting model.

For polishing purposes: Pumice, rouge, whitening, water-of-Ayr stone, sandpaper, and for polishing steel, emery and oil.

The art of polishing is to produce first of all a perfectly smooth surface, free from scratches and irregularities. This should be accomplished with the sculptor and smooth file. Afterwards sandpaper and water-of-Ayr stone must be used. A good surface should be put on a case before it is taken to the lathe, so that only a moderate amount of rubbing with pumice and oil (if a gold plate), or pumice and water (if a vulcanite plate), need be used, and the final finish may be given with rouge, or whitening and water.

For modeling purposes: Beeswax, yellow and white, paraffine, resin, and, as a coloring matter for the wax, carmine.

The coarse metals in general use for casting purposes are: Lead, zinc, tin, type metal, fusible metal, meter metal and Sullivan's cement.

Sullivan's cement may be prepared in the following manner: Make a saturated solution of sulphate of copper in boiling water. Then place in the solution several pieces of sheet iron. The copper will be immediately precipitated. Pour off the water and wash the precipitate several times in weak sulphuric acid; this will dissolve out all the zinc. Now add to the copper precipitate a sufficient quantity of mercury to amalgamate with and form it into a stiff paste. The surplus mercury is expressed from the mass by squeezing in a piece of chamois leather. It should now be moulded into small pellets and allowed to harden.

Sullivan's cement comes in for many useful purposes, such as making models for crowns, or unwearable teeth for plaster models. If used for these purposes, it should be softened and pressed into the cavities representing the teeth in the impression. The impression is then filled up with plaster of Paris and allowed at least eight hours to harden, before it is placed in hot water to remove the composition. We shall thus have a plaster model with teeth of Sullivan's cement.

Materials for models: Plaster of Paris of the finest quantity should be used for this purpose; this is known as "superfine." For other purposes than models, a lower grade of plaster may be used.

To prepare a plaster model for a gold plate, it should be carefully—that is, slowly—dried, and then, while still warm, placed in hot melted stearine, or in melted wax and resin, or it may be varnished with methylated brown spirit varnish. The object of thus preparing it is to harden the model so that it is less liable to be rubbed during the swaging of the plate and fitting of the clasps, and it also makes the model nicer to handle.

Materials used as a parting medium between—

1st. Two surfaces of composition. Vaseline, French chalk or soap.

2d. Between two surfaces of wet plaster. Soap or vaseline, preferably the former.

3d. Between hard rubber and a plaster surface. French chalk, silicate of soda; thick tin foil or meter metal, or, before the rubber is vulcanized, French chalk or a piece of linen. This latter should be dipped in hot water before applying it.

Acids used for cleaning plates: For gold, hydrochloric acid; for silver and dental alloy, sulphuric acid.

These may be used slightly diluted, and kept in an ordinary gallipot fitted with a cover. When it is found necessary to boil the case out in sulphuric acid a copper dish may be used for that purpose, and the fumes of the acid allowed to escape up the chimney.

Materials used as a flux for soldering purposes: Borax for gold, silver, platinum, dental alloy, copper and brass. Zinc chloride for tin, lead, zinc or pewter.

Chemicals used for collecting and purifying gold filings: Potassium carbonate, potassium nitrate, sodium chloride, hydrargyrum bichloride. When the filings are collected into a button, this should be remelted with borax. —*British Journal of Dental Science.*

ARTICLE IV.

SIMPLE AND COMPLICATED REGULATING MECHANISMS; ÆSTHETIC MECHANISMS; PROPER AND IMPROPER ANCHORAGE.

BY J. N. FARRAR. M. D., D. D. S., NEW YORK CITY.

Simple and Complicated Regulating Mechanisms.—In some of my published papers I have dwelt somewhat on this subject; but as there are some *dentists* who persist in efforts to *prejudice students against improvements* in regulating mechanisms, a few more remarks will be made. In mechanics simplicity is the great desideratum with all natural inventors. No useless elements are found in first-class machines of any kind; but it is not everybody who understands this subject sufficiently to comprehend that there can be simplicity in complicated machinery, and that some of the grandest and most valuable machines ever invented are so because of this complicated simplicity. The Hoe printing-press is a startling example of this. More than 16,000 pieces in one machine, printing, folding, cutting, pasting and filing 96,000 newspapers per hour, is an example of complicated simplicity and a marvelous illustration of the fruits of the genius of man. The true mechanical genius *laughs to scorn* those who attempt to ridicule the best mechanisms ever invented for correction of irregularities of the teeth, calling them unnecessarily complicated, simply because they themselves have not sufficient skill to even copy them. So long as the dental profession contented itself with crude, cumbersome mechanisms, no progress was made in this branch; but when higher mechanical skill was applied it advanced and continued to advance as more and more thought was centered upon the subject, until now it has loomed up as one of the greatest of all the branches of dentistry. Indeed, it has reached a standard that never could have been attained from the acceptance of the views of those persons who are always to be found pulling back until dragged forward by public sentiment. In my office there are hundreds of mechanisms, many of which may at first seem to the tyro to be more complicated than is necessary; but there is not one that is really complex to an expert. Those which at first appear so are only examples of complicated simplicity that operate as easily as the turning of a screw. There are in vogue old-fashioned regulating mechanisms, consisting of plates and springs, match-sticks and strings, that *are* complex. These are not only difficult to manage, taking unnecessary time and causing great pain to change the strings, but impossible to be kept clean. With a lot of such things matted with decomposed food, no patient can feel happy over an operation.

True mechanics recognize any mechanism as simple that can be operated easily and will accomplish the result desired. Anything that requires great care and unnecessary time to manage is regarded by them as an imperfect machine. In other words, a regulating mechanism, if difficult to manage and painful to endure, must be regarded as more complicated than one (though requiring manipulative, mechanical genius to contrive) that will, when properly finished and applied, be managed easily and quickly, without causing pain. The former is *low mechanics*, the latter *high mechanics*.

Æsthetic Mechanism.—Another phase of high mechanics, as applied to dentistry, is the æsthetic. Failure may arise from lack of skill on the part of the operator or by perversity of the patient. But many failures can be traced solely to the disgust of patients through lack of æsthetics in the mechanisms, because conspicuously black and filthy mechanisms do not encourage the patients. There have been many failures, by the use of such things, that would have ended in a glorious success if delicately and beautifully made gold mechanisms had been used.

Anchorage, Proper and Improper.—When the first molar has been extracted it becomes necessary to use the second and third molars for anchorage, to move back the bicuspids; but they should not be drawn upon for moving more than one tooth at a time, and even then these anchor teeth should be frequently examined to prevent too great inclination forward. If they have moved too far, they should be given liberty, permitting them to return to their normal positions. It should not be inferred from this, however, that the starting forward only a short distance is dangerous to these teeth, as all anchor teeth are liable, and even expected, to be moved somewhat by the draught. The question to decide is, how long such started anchor teeth can be safely used to further the operation. If the antagonism is not broken too much, these teeth will generally settle back into their former and normal places, even if they are elevated slightly in their sockets. If elevated, however, it may require months. Because of this natural tendency to settle back and down into the sockets, it is *not prudent* to be in too great haste to *grind teeth* to improve antagonism after having completed the operation of moving teeth.

In planning a mechanism for moving teeth, one of the main points to be taken into consideration is enduring, firm anchorage. In my own practice I always include for anchorage all the teeth that are practicable, not only to prevent their being moved, but also to prevent soreness of the sockets. The exceptions to this rule of practice are in cases where a sufficient number of teeth cannot be taken advantage of for anchorage, or where it is necessary to *move anchor teeth forward to aid in filling extra space.—Ohio Dental Journal.*

ARTICLE V.

HOW TO VULCANIZE RUBBER PLATES BETWEEN METALLIC SURFACES.

BY DR. A. N. DICK, WOODLAND, CAL.

The process which I employ is the following: After the teeth have been articulated and the model buried in the lower half of the flask, trim away all surplus wax from the palatal side of the teeth, leaving the model exposed.

Now take a sheet of good modeling compound, rolled to the thickness desired for the plate, dip it in hot water and adjust it to the model and teeth, using a spoon to pour on the hot water till it fits perfectly, so as to develop the ruge on the lingual surface. Then with a sharp instrument trim the edges and finish to the desired shape of plate. Moisten the surface and burnish on a piece of extra tough tin foil No. 4, first pressing it to position with a bunch of cotton or the corner of a soft napkin. Let the burnishing be done very carefully with a smooth round instrument.

I prepare my sheet of modeling compound by pressing it between two pieces of glass. In that way I secure any thickness that I desire.

In preparing the plaster for the mold, pour the required amount of water in the mixing-cup and sprinkle the plaster on the water without stirring, till enough of the plaster has settled down in the water to give the desired consistency; by so doing, the air that is in the dry plaster will be floated out, so to speak, and not be carried in the mixture as it would be if the plaster was stirred from the beginning, thus securing a mold free from air bubbles. Then pour and let it set.

After opening the flask, pour a little hot water on the base-plate and lift it carefully from the underlying tin foil.

If these details are strictly followed by a skilful hand, the result will be a beautiful lingual surface that will require only the felt and brush wheels to finish it. The file and sandpaper will be needed for the margins.

To secure a metallic surface for the palatal side of the plate is equally simple, and I think, to the mind of the practical man, needs no explanation. However, I would suggest that the same care should be used in mixing the plaster for the model as for the mold, otherwise there would be air holes in which the rubber would be forced through the tin foil and thus make a rough surface. The foil for the palatal side should be No. 4, and the model should be wet when the foil is applied to it. The foil should be applied to the model with the thumb and fingers without burnishing, as the burnisher would injure the model.—*Items of Interest.*

ARTICLE VI.

CARVING OF BLOCK-TEETH.

BY F. A. CONEY, D. D. S., DOYLESTOWN, PA.

Hand-carved blocks have the merit of being the most natural-looking and at the same time, when well mounted, the strongest artificial teeth made. When the best results are desired, and neither time nor cost are objects, carved blocks are the best resource of the dentist.

It is here that the carver has an opportunity to carry out his conception of a very difficult and peculiar case. The teeth can be placed in any position or inclined to any angle deemed desirable. The natural expression of a carved block is seen in the bolder curves and contours made by the skilful hand, which it is impossible to produce from brass moulds.

The following is a description, in detail, of the carving process in general use from about the year 1850 to date.

The first step is to get a perfect impression, and a bite for an upper or lower, whichever space the piece is intended for. The simplest and shortest method of getting a bite for small partial cases is the following:

Take a roll of beeswax—or modelling composition, which I prefer—from one to two inches long, according to the number of missing teeth, and about three-fourths of an inch thick. Soften in hot water, bend into a semicircle, and press it against the teeth on each side of the space or spaces requiring substitutes. Then direct the patient to bite through the wax until the cutting-edge and cusps touch and occlude naturally. After pressing the wax or modeling composition against the labial or buccal surfaces of the teeth, carefully remove it from the mouth, and harden it in cold water.

Now, then, take water and plaster and mix it quite thin. First fill the imprints of the teeth in the wax or modeling composition, and work the plaster into said imprints. As the plaster stiffens build it up and extend it back over the palatine surface, and about one-half or two inches beyond said impression. That will give the upper part of the model. Trim it to the desired shape to handle conveniently. Now sandarach or shellac the plaster exposed to view, then oil the model and bite with sweet oil. The next step is to run the lower part of the model with plaster. When plaster is set, put said model in hot water to soften the wax or modeling composition.

When soft take it apart, and you have the model of the mouth to carve your block by.

The next step is to enlarge the cast. If it is to be a block of two teeth, cut from the approximate surface of each tooth of both sides of space to be filled about one-half of a sixteenth of an inch. This will give the shrinkage for said block.

For a block of four teeth you proceed in the same manner as for a block of two teeth, with the exception that you take from the approximate surfaces one sixteenth of an inch from each tooth, thus allowing a greater shrinkage for a block of four teeth than for a block of two teeth.

For a block of six teeth, you proceed in the same manner as you did for the block of two or four teeth, allowing, of course, for a greater shrinkage, according to the case you have in hand.

Now prepare in a small tin cup spermaceti, melting over a spirit lamp until it become liquid. Add enough Chinese or red vermilion to color it to a cherry red. Then take the liquid spermaceti and paint with a cemel's-hair brush your impression model, the space between the canines. If it is to be a block of four, also paint the canines. For a block of six do the same as for a block of four, in the same manner for all models which are used for carving of teeth.

Apply with a camel's-hair brush sweet oil over the antagonizing model or bite, so the bite will seperate from the body without drawing it.

I use Luken's body, prepared by S. S. White. It is the strongest body known, and fuses at the highest heat. This body I mix in a porcelain bowl or wedge-wood mortar by adding water to it to make it the consistency of putty. It is now ready to be packed or worked into the model. When the model is full of body, dry out the body on a muslin cloth so as to absorb the moisture which arises on the surface; it also makes the body more solid and firm. It is then ready to begin carving.

The carving instruments are known as a string-bow, carving knives of different shapes, one bone spatula, pin tweezers, and camel's hair pencils.

Before commencing this process the size and shape of the teeth must be decided upon, the perfect form of the ideal teeth must be in the mind's eye. The width of the teeth is then marked off on the block, beginning at the central or median line, the desired width and height. With the straight carving-knife, and by cutting an inverted V-shape between the teeth, the necks are carved in a semi-circular groove, not deep; have them to incline towards the centre equally on both sides.

The model is now reversed, and the points of the gum between the teeth are carved down, and then the body is added to each tooth to bring it up to the desired shape and size, and to look as natural as possible. The gum is then carved the desired thickness, and also to give shape to the block. The palatine surface of each tooth must be carved so as to antagonize with the opposing teeth. A recess must be made in the block for the pins. The pins are then inserted, and the body worked around them.

Now comes the difficult part. To take the block off the model, heat the block over the flame of an alcohol-lamp (a large one preferred) until the spermaceti is all melted from underneath the block. The greater part of the spermaceti will be absorbed in the body. It will then be loose on the model. Now drop the block on a piece of cotton, and be very careful not to let it have too great a fall. While the block is cooling, which takes about five minutes, take a slide and put a sufficient amount of kaolin, say about one inch in height and enough in width to lay the block upon. Pick up the block with the thumb and forefinger and place it with the palatine surface, or pin side, on the kaolin. Now make about half a dozen cone-shaped pieces with the body, about one inch high. They are to be used as trial pieces.

The block is now ready for biscuiting. Biscuiting is the hardening of the block in a red-hot muffle. The furnace used for biscuiting and baking is an ordinary two-muffled furnace, purchased at any of the dental depots. First put wood in the furnace, then put the slide containing the block in the back part of the tower muffle, leaving the door open for the escape of the smoke which arises from the grease in the block, then start the wood to burning and put on about two or three bucketfuls of coal. Now, when looking at the block in the muffle, the teeth or block will be found to have turned black, caused by the grease in the block being burnt out.

As the fire increases, the muffle becomes red on the inside; the teeth will then resume their former shade; at this stage close the muffle door, and wait until the muffle comes to a bright-red heat; then take out a trial piece and with a penknife cut to see if it is as hard as pipe-clay. If so, it is time to remove the slide containing the block from the muffle; check the fire by removing the stoppers on the sides and top of the furnace. When the block is cool, remove it from the slide, brush off the kaolin, and transfer the block to the model. It is now ready fcr enameling. Enamels are technically called necks points, stains, and gum enamels.

The enamels are then applied to the block with camel's-hair pencils by holding the block-teeth upward. Enamels should be mixed with clean water in a small glass or porcelain cup, making a cream-like solution. The neck enamel is applied first at the neck of the tooth, extending half-way up the teeth towards the cutting-edge or point. The neck-enamels vary in color from bright yellow to dark brown. Now apply the point enamel on the cutting edge of the tooth, and bring the point enamel down over the neck-enamel, so as to overlap or coalesce. The point-enamels vary from white to different tints of bluish grey and yellow. The gum enamel is applied to the points between the teeth with the carving-knife the rest of the gum enamel is put on the block with a camel's-hair pencil, care being taken to place the gum-enamel close to the necks of the teeth, but not to overlap the neck-enamel. It is not best to make the gum-enamel very smooth; it fuses at a little lower heat than the point and neck enamels, and is apt to become glassy.

The festoons around the necks of the teeth should be ridged, so as to make them more natural looking and give them a certain prominence and individuality of their own, so the teeth will look as if they had grown out of the gum naturally. Many blocks are ruined by not having the gum-enamel applied properly.

After the enameling is all done, prepare a slide the same as was done for biscuiting, with this exception—instead of laying the block pin-side down on the kaolin, place the block perpendicular, the cutting-edge of the teeth upward; enamel your trial pieces at the points with gum enamel, and place them on the slide in front of the block. Now all is ready for the final baking.

Place in your furnace the side stoppers, add coal to the fire, and fill the furnace with fresh coal; then put in the upper stopper, close all openings around stoppers with fire-clay mixed with water. When the lower muffle is at a white heat the slide is then grasped with a pair of long tongs, the ends of which are flattened for this purpose. The slide is lifted and held before the muffle for about two or three minutes, or until the block is thoroughly dry, then put the slide into the fore part of the lower muffle and gradually move it towards the back part of the muffle. When you reach the baking part, which can be distinguished by the intense glow or white heat, close the muffle-door, and give the block about ten minutes' time; then take out a trial piece with the tongs, and examine to see if the trial piece is fused or glazed enough; if not, bake about three minutes longer, take out another trial piece, and if it is fused and glazed enough, the block is done.

Now take the stopper out of the upper muffle; draw the slide from the lower muffle and pass it quickly into the back part of the upper muffle; close up the muffle with the stopper and close all openings with fire-clay; draw the fire and let block remain in the annealing or cooling muffle until cold. When cold the block is ready for grinding, which all blocks require more or less, take a new impression and make a cast or model to grind the block to fit. To facilitate the grinding, the prominent parts of the cast are coated with a mixture of red vermilion and sweet oil which will spot the under side of the block and show the exact place to be ground off to make the block fit solidly on cast. After this is done it is ready to be mounted upon any base the operator may wish.—*International.*

ARTICLE VII.

RUBEFACIENTS AND VESICANTS.

BY A. W. HARLAN, M. D., D. D. S., CHICAGO, ILL.

Read at the Union Meeting of the Fifth, Sixth, Seventh, and Eighth District Dental Societies, held in Buffalo, October, 1894.

When I was urged to present a short paper to the members of this gathering, I did not fully make up my mind to write upon the above topics, as I had something more practical on hand, but after a time I concluded that occasional practicability was all that was needed to make some subjects interesting.

You are asking of what value to dentistry a consideration of reddening and blistering will be to busy practitioners? I will try and answer your question. There are many conditions requiring the use of a rubefacient, and not a few where a blister is of immense value. It is not necessary, and it would defeat the effect of these brief notes, if an attempt was made to write a full paper on counter-irritation. My opinion is that rubefaction and vesication, as remedial measures, are not taken advantage of by dentists sufficiently often to make them familiar with their objects in medicine.

What is a rubefacient? This is the definition of Dunglison: "Rubefacient; producing redness, a medicine which produces redness of the skin. The action is called rubefaction, a gentle, local irritant. Vesicant; a blister, vesication, the action of a vesicant, the formation of blisters, vesicating blister, epispastic. Blister; vesicle or vesication, from vesicatories or other causes, also vesicant, vesicating; a blister plaster, substance which when applied to the skin irritates it and occasions serous secretion, raising the epidermis and inducing vesicles, as cantharides, mustard ammonia, etc. Blisters are used as counter irritants. A blister applied for a few hours to produce this effect is termed a fly-blister. A perpetual blister is one kept open by appropriate dressing." The latter definition is also from Dunglison. Perhaps the simplest case of dental disease is pulpitis. Of what value would rubefaction be to the patient? Local anodynes and even local anæsthetics often fail to give relief, and the pulp is doomed to die from lack of appropriate measures. In many cases of this nature the application of hot water to the neck and above the ear on the affected side, by means of a few thicknesses of heavy towelling (six or eight thicknesses) soaked and partially wrung out, will prove efficacious, if continued from five to ten minutes. In nearly all cases of pain around erupting third molars, the use of water about 120° F. to 130° F., covering an area of from four to six inches from the focal point, will give the necessary relief in a few minutes. The direct application of a small jet of water in the mouth on the inflamed surface is both painful and injurious, as gentle unloading of the engorged vessels is not accomplished in this manner.

For minor ills of the gums (in pyorrhœa), rubefaction may be accomplished without vesication by using a saturated solution of menthol in alcohol, or even less than this, down to a ten-per-cent. solution. Oil of peppermint, oil of turpentine or oil of cloves will produce reddening, and when used over a large area will often so alter the blood-current that there will not be anything more than swelling without suppuration. Rubefaction may be produced with chloroform, camphor, and aqua ammonia. Mustard and capsicum are also used for this purpose. It must be remembered that the object of rubefaction is to draw the blood from a circumscribed inflamed area, and fill other unstimulated points, giving nature an opportunity to recover. I have been surprised and grieved to find that rubefaction is practised on too small a territory, not sufficient to give the desired relief. Estimated that an inflamed spot is one-half an inch square, the rubefacient should cover ten times this area *in a locality which will direct the flow of the blood elsewhere* and relieve the tension on the arteries or arterioles. In acute pericementitis, in addition to rubefaction, it may be necessary to produce vesication—blistering. Many agents are used for this purpose, none of them very nicely or in appropriate places. A blister to relieve pericementitis in a superior central incisor should be made over the roots of the bicuspids, and the gingival margin of the gum, around the central incisor, should be painted at the same time with compound tincture of iodine. The blood-supply will be deflected and the resolvent effect of the iodine will soon be felt around the apex of the root The gum must receive at least two paintings. This rule applied to all such cases will give much cause for congratulation from your clients. Ammonia, capsicum, cantharides or black mustard oil will produce blisters. Carbolic acid will produce a poor blister. Do not use zinc chloride for this purpose. A blister will do no good after the formation of pus around the apex of the root. Rubefaction may do something to alleviate the pain, but a blister increases it. Rubefaction and blistering for inflammation of the gums and the peridental membrane, facial neuralgia, as well as the pulp of a tooth, will be more efficient than leeching and purging

A modification of Mayer's hammer may be used with good effect for rubefaction. Mayer's hammer is a steel disk dropped in boiling water before it is used on the mucous membrane or the skin. The one I use is about the size of a copper cent, and twice as thick, with a handle that is screwed into it while it is in the water; by applying this gently over three or four inches of space, great reddening is produced.

What the patient needs is a new sensation; this he gets with a blister or a rubefacient. When you are about to produce rubefaction or vesication, do it with your whole soul. Do it well; do not be afraid. Use blisters in inflammation, and rubefacients in congestion or stagnation. An ugly blister is not needed, as it will cause sloughing, and this is unnecessary around the mouth or on the face.—*Dental Practitioner and Advertiser.*

ARTICLE VIII.

ATTITUDE OF THE DENTIST TOWARDS HIS PATIENT.

BY R. G. MCLAUGHLIN, D. D. S., TOROTO.

Read before the Toronto Dental Society.

In this progressive age, when we are making such rapid strides in practical improvements, our professional energies are naturally occupied in keeping pace with the new ideas that are ever being advanced in the practical part of our work. But is it not wise to sometimes call a halt in this race with crowns, bridge-work, abscesses, and the numerous other cases ever before us, and just for a moment take a glance at ourselves personally, and ask how we are carrying ourselves before the world—how our professional standing compares with that of our brethren round about us? What is our general attitude and demeanor before our patients? and last, but not of least importance, with what amount of respect (professionally and otherwise) do our regular patients, month after month, deign to treat us.

These are questions that ever and again come to the thoughtful and ambitious man, whatever his profession may be. But you naturally ask, "What has all this to do with the success or failure of the modern and practical dentist?" I answer at once; a great deal. If there is a calling in life in this age in which good manners, gentlemanly address, quiet dignity and professional self-respect form many of the rungs in the ladder of success, that calling is surely dentistry. Here it is where the true gentleman stands head and shoulders above his confreres; here it is where the really educated man shows to best advantage, and here especially is where the man of refined tastes, and whose every word and action is filled with harmony, is sought after by the choicest and best in the land.

But if we are to come from the general to the particular, we must take ourselves to the operating room, and follow the dentist as he is receiving, day after day, his ever-changing classes of patients; for here, if at any place, the man's true professional spirit is brought to the surface. In his every dealing with his patient the dentist should never for a moment lose sight of his self-respect. There should ever be beneath the surface that quiet dignity of manner and unruffled temper which are ever indicative of the true gentleman. You may be assured your patients will not be slow in appreciating your worth in this particular and deporting themselves towards you accordingly.

Again, closely allied with what I have just said, and of no less importance, is the professional spirit generally displayed by the dentist in the discharge of his daily duties. Right here, I believe, is our great vantage ground in gaining the confidence and professional respect of our patients and right here is the point where the patient can and must be educated to a proper appreciation of the standing of the dentist among the professional men of the world. To realize how this educating process is being carried forward or retarded by the different members of our profession we have but to look to the general deportment of the various patients who for the first time come to us for treatment from the different parts of the city or Province. They have come from different offices, from different operators, from men ranging in professionalism from the lowest-bred quack to the ideal professional spirit. And how long does it take the patient to reveal to any of us by her every word and action the psofessional calibre of her last regular dentist?

You meet now the distrustful patient, who appears to have not the slightest confidence in your advice for the preservation of her teeth, and when told that certain molars and bicuspids need immediate attention, will not be convinced till mirrors are produced and the cavities seen with her own eyes—a sure indication that her last dentist had not succeeded in gaining her confidence. What is the remedy? Here, I think, it is: man before method. Differently constituted patients need different treatment; but, in general, I think it is better to quietly impress on the patient the fact that such is the condition then existing that such and such remedial operations are necessary, but she, as the patient; is at full liberty to decide whether the teeth are to be preserved or not.

Again, we all occasionally meet the *dictating* patient—the one who knows all about it, and who only looks on the dentist as a mere mechanical assistant, whose every operation must be under her direct supervision. How are we to treat such a patient? Certainly it is sometimes a difficult matter to solve. The indications strongly point to the patient being pampered and spoiled either by the special indulgence and want of self-confidence in her former dentist. Just how to give such a patient to understand that such a directory manner on her part is entirely out of place, is a problem that each practitioner must settle for himself. Certainly, if the dentist be of the right professional material and possessed of sufficient confidence and ability, most such refractory patients will not be long in being educated to the knowledge of their proper behavior in the dental chair.

We might go on multiplying these examples that daily come to us from a badly educated public; but enough has been said to show us where we stand and whither there is danger of us drifting. Yet each practitioner, wherever he may be placed, has the opportunity of training for himself, if he be possessed of the proper professional spirit, a class of patients who will daily manifest to him such general respect and professional confidence that will make his hourly tasks more genial and full of sunshine than they otherwise would be.

But there is another part of this subject that I am not willing to overlook. The dentist, in his usual round of probing, drilling and burnishing, should ever show towards his patient a spirit of practical sympathy. Once your victim fully understands that in every thrust and twinge of pain you are fully alive to the fact that you are operating on live tissue, you will have gone a long way in winning her confidence and making of her a lasting friend. How naturally we become more and more hardened as we grow older and busier in the work! How we soon come to drill and burr into a sensitive tooth with the same cold deliberation we might show in drilling into so much wood or stone! How apt we are, especially in our busier moments, to become irritable and impatient if the poor cringing and terrified creature, when taking the chair on the first occasion, is occupying too much of our precious time in getting over her paroxysm of fear and mustering sufficient courage to open wide her mouth. Let me tell you, the best practical lesson I, for one, get in exercising more patience in such cases is once in a while occupying the chair myself. No doubt, we are liable to become so absorbed in the success or failure of the operation in hand that we, for the time being, lose sight of the sufferings of the patient. In this respect I think mistakes are frequently made which prove far reaching in their effects; for example: a young girl of fifteen is in the dental chair for the first time, and the operation in hand is a gold-filling. The dentist has his whole mind occupied in completing a perfect operation, and after an hour's patient toil on his part, accompanied throughout by moanings, pleadings and hysterical sobs from the patient, the operation is completed and a perfect gold filling is the result. We now ask ourselves, Has this hour's work been a success? In one sense, Yes; in a greater sense, No. The operator has certainly succeeded in inserting a beautiful gold-filling, and so saving from the ravages of decay that one tooth; but, at the same time, he has also succeeded in so worrying and terrifying that delicate patient that she will never again willingly enter a dental office, and consequently the remaining twenty eight or thirty teeth may through the effects of that one operation be sacrificed. Now, the operator's first care in such a case should be to perform at that sitting as delicate and painless an operation as the present preservation of the tooth would permit. A temporary filling might answer the purpose fully as well for the time being, and in after months, when the patient had gained more courage and nerve-power, the gold work, if necessary, could be accomplished at a less sacrifice.

Let me say, in conclusion, that our whole aim in this matter should be to accomplish the highest class of work with the minimum amount of pain, and in this advanced age in dentistry our patients are beginning to expect from us, and to some extent properly so, that our operations should be, in general, if not absolutely painless, as nearly so as the circumstances will permit.—*Dominion Dental Journal.*

ARTICLE IX.

WILL THE TOO PREVALENT USE OF PLASTICS IN FILLING TEETH WORK INJURY TO OPERATIVE DENTISTRY.

BY J. D. PATTERSON, D. D. S.

This question is embodied in question No. 4 from the A. D. A. list of questions for the use of State and local societies for the present year. The full text of the question is as follows: "Is not operative dentistry liable to the same injury from the too prevalent use of plastic stoppings as occurred to prosthetic practice from the introduction of vulcanite?"

The framers of this question were, no doubt, somewhat hasty in formulating it, and it may not say just what they intended. We, however, get the gist of their intention, and I think it may be stated as follows: That the introduction of vulcanite cheapened prices and is so easily worked that a swarm of incompetents occupied the field heretofore filled by skillful metal-plate workers, and crowded them out, to the detriment of that field; and that the too prevalent use of plastics will also cheapen prices in the operative field, and will tend to push the skillful operator in gold filling out of business.

In the first place, I am inclined to deny the assumption that the introduction of vulcanite injured prosthetic dentistry. It did injure our profession generally, on account of the millions of serviceable perfect teeth that were sacrificed when cheap dentures were introduced. In this we find the injury, and, sad to say, this injury still continues to mar Nature's perfectness and to keep the dentist, in the esteem of popular opinion, upon a plane lower than his due. When the prosthetic dentist in placing dentures was limited to gold and platinum, the fees were beyond the reach of the majority, and so the people conserved their natural organs if they did not cause suffering. But upon the appearance of the cheap vulcanite, the natural organs, good, bad and indifferent, of the class formerly unable to pay the high fees, were sacrificed ruthlessly, and the accomplished men in the profession and the best informed patients have on this account deplored the advent of cheap vulcanite dentures. So far as vulcanite work is concerned, we are not willing to admit that the best results are accomplished more easily than with metal. True it is that in the usual slip-shod vulcanite work, commenced without artistic knowledge and completed with gross neglect of mechanical nicety, no particular skill and training is required; but I have always maintained that a denture of vulcanite, made in a superior manner, perfect anatomical form, perfect preparation and protection of model, perfect joints if in block teeth, or perfect similation of natural gum where block teeth are not used, all requires a degree of skill just as high as is required in making a gold plate. The result cannot be so perfect on account of the additional clumsiness of the vulcanite in its palatal portion, and lack of strength, but in securing the most perfect possible result with the despised vulcanite, your skill is as thoroughly tested with the one as with the other. It is true there is not required the skill in metal-working which the jewelry's apprentice knows about, but that knowledge can scarcely be held at a high valuation which brings only one dollar and seventy-five cents per diem to the finances of the competent journeyman jeweler.

For these reasons we cannot accept some of the evident conclusions of the question committee. Yet, understanding their intention to point to the consideration of whether the too prevalent use of plastics will work injury to operative dentistry, I will begin this part of the discussion by saying that for myself I do not believe it will. It cannot surely be denied that since the increased use of plastics, thousands of teeth are daily made useful that were formerly thought beyond the reach of dental art, and that also on account of the lessened cost of plastic materials thousands of people have blessed operative dentistry who would without the plastics never have known the relief of any operative procedure.

However we may boast of gold fillings and take pride in accomplishing beautiful results—as we all do—yet we must, I think, all have a feeling deep down in our reasoning and logical minds, that the filling of the future will be a plastic, that the ideal filling not yet found will be for the majority of cases a much-despised plastic; and can we deny that this very "too prevalent" use of the material will ultimately bring about great improvement in these same plastics, so that the ideal filling will thereby be more rapidly reached? We can look back only a few years and readily trace the improvement in nearly all of the plastic filling materials, and the improvement has been the natural result of an unusual demand, which our questioners would no doubt call a "too prevalent" use. It is possible poor judgment has been used in plastics, but poor judgment is also used with gold; but out of all mistakes we generally find the summing up somewhat nearer a better standard.

If it is desirable, as a few spirits in our profession seem to think, to exclude from the ranks all save a select coterie who scorn the plastics and obtain large fees with gold, who are continually emphasizing that they will not have amalgam in their offices, denominate it "nasty stuff" and say that it brings disgrace to our calling—the "too prevalent" use of plastics will, of course, infringe upon their assumed sovereign right and the circumsbribed coterie will be broken up; but when a larger and better horizon lightens up and the altruist dares to ask for the greatest results to the greatest number, this coterie will be found to be only squatter sovereigns after all. Our minds must be in sympathy with the larger patronage whose blessings are just as deserved as those whose relief from suffering could only be obtained with a full bank account.

The matter in a nutshell, it seems to me, is that, like working in vulcanite, we are too apt to believe that little or no skill is brought into demand with the employment of the plastics, when this is *positively incorrect.* The great skill in operative dentistry, in the first place, is in the adaptation of the right material; judgment of the pathological and other conditions of each case as it comes to hand; and then comes the manipulative dexterity. Now, as between gold and cement in filling, allowing that the two materials are used so as to secure for each the best result possible for each, and I cannot readily see where any greater skill is called into action in the case of gold work. It is more tedious, more exhaustive to work gold, and when the operation in gold is over, we point with pride to a great thing accomplished, but it is, I think, largely the exhaustion and relaxation of a manual labor, which comes after cutting and piling neatly a cord of wood. So far as the judgment and education and dexterity are involved, there is just as much of either used in the intelligent using of cement, only the exercise of these qualities is not so long continued.

If operative dentistry suffers from the use of the plastics in filling teeth, it will be because of the poor opinion of their value, which invariably leads to careless work in their use. Thus, in our opinion, if ill comes, it will lie with the ignorance and carelessness of dentists themselves, and is not due to the qualification and possibilities of the materials. Instead of decrying useful adjuncts, let us put the blame where it belongs and purge ourselves of blame in the matter.

As the plastics have widened our field of labor and made possible conservative operations once impossible, let us turn our attention, not to their obliteration, but to their improvement. Another consideration is this: the summit has been reached in the perfection of the various forms of gold, and we are not to expect that they will be improved; nor do we expect that new or improved methods of operating will come to be known. The skillful gold-filler of the future will never excel that of the present or of the last quarter of a century, but in plastic work we are constantly seeing improvement in materials and methods; and we confidently expect still more improvement in materials and methods, and we confidently expect still more improvement in the future. The advent of vulcanite did, as we have explained, have its evil as well as its good results, but we fail to see, in the light of the past, the present or a logical future, how operative dentistry is suffering or is going to suffer from the use of plastics. Their "too prevalent" use will only compel *more* prevalent visits to the dentist, which will give more constant supervision of the dental organs, and that is surely an unmixed evil to either patient or dentist.

In conclusion, the matter of art comes in. If any of our methods, or practices are inartistic; then those practices or methods should, if possible, be changed, for the dentist who is not an artist is a poor professional specimen. I apprehend that one of the most prominent changes in dental practice which we will see within a very short time will be a general movement with both patient and doctor, against the unnecessary placing of considerable surfaces of gold in the anterior teeth; which practice, many already see, is grossly inartistic and, we must admit, reminds us of the gold ring in the nose of the barbarian. In the correction of this objectionable practice, the plastics in filling must, it seems to me, be the principal factors. The observant practitioner who is fortunate in having among his patients the most cultured and artistic, cannot fail to have noticed their extreme repugnance to the appearance of gold in the mouth. They prefer the plastics and are glad to return frequently for their renewal rather than have flashing gold shock artistic feeling. We boast of our Western civilization, and I am as proud of it as any, but in many realms we must give preference to the judgment of people of places and countries older in artistic education and feeling. These people are almost to a unit against the gold display we have referred to. American dentists who have gone to practice in European capitals tell us that they almost forget how to insert gold, for their patients want none of it; first on account of its glaring prominence; and second because they object to the long-sittings often necessary for gold work. This latter feature is also yet another argument for the plastics, for there are few operators who have not witnessed considerable shock from protracted gold operations on account of reflex impressions made through the fifth nerve upon vital ganglia.

In summing up, I think we may say that the too prevalent use of plastics will not injure operative dentistry, but rather enlarge its field, because while ignorant, unskillful or indolent practitioners will injure by using it without judgment where a more permanent article should have been used, yet in the majority of cases even the "too prevalent" use of plastics will generally redound to the better comfort of humanity, and to the increased success of operative dentistry.—Proceedings of Kansas State Dental Association.—*Western Dental Journal.*

ARTICLE X.

ANOTHER METHOD OF BANDING A LOGAN CROWN.

Dr. Thomas P. Hinman, of Atlanta, Ga., at the clinics of the Mississippi Association, demonstrated an original method of banding a Logan crown, without heating the crown for soldering the band. The unequal expansion of the large amount of metal in the Logan pin is liable to crack the porcelain, the metallic oxide formed in the process of heating, also changing the color of the crown. By

Dr. Hinman's new method, the root having been prepared as though for a Richmond crown, an open-mouthed band is fitted to the root and trimmed as desired to fit under the gum margin. Having the little screw-press of the Hollingsworth contouring method, the crown is held in the flame and heated red-hot, and the portion fitting the root burned in the block of wood belonging to the screw press, and a hole burned or reamed in the wood to receive the pin of the Logan crown. The crown is then placed in the band, with the pin in the hole, and forced down in place under the screw of the little press. The press has been improved by Dr. Hinman, the block of wood being made circular, fitting inside of the ring forming the floor of the press, and a swivel put on the point of the screw so that the crown is not twisted round and out of position, relative to its adjustment to the abutment of the root as the screw is turned down.

This makes a very tight fit of band to crown, requiring no cement; the band is cut away on the labial surface, allowing no gold to show on the face, but with heavy burnishers burnished closely over the palatine curvature. This method is adapted to the six anterior teeth. For bicuspids, Dr. Hinman cuts a slight groove, with a corundum stone, all around the crown, pressing the gold of the band closely with the groove.

Dr. Hinman is also at work on bridge-work made entirely of Logan crowns, doing away with the gold backings which so mar the beauty of porcelain teeth, one of the strong points of the method being that repairs in the mouth can be made with great speed, ease and perfection, though he thinks repairs will rarely be necessary.—*Items of Interest.*

Communicated.

AMERICAN DENTAL ASSOCIATION MEETING.

The Local Committee have made arrangements with the following Hotels and houses for the sessions of the American Dental Association commencing Tuesday, Aug. 6th, 1895. The "Coleman House" fronting the ocean, the largest Hotel in Asbury Park with rates $3.50 and $4.00 per day and the use of the ball room at stated periods of the day and evenings for large Committee meetings and sections. The "West End Hotel" a first-class Hotel opposite the "Coleman House," the rates $2.50 and $3.00 per day with the use of the ball room at stated periods for Committees and sections. The "Ocean Hotel" next door to the "West End" capacity 900, first class in every respect rates based on 100 or more Dental Convention guests at $2.50 and $3.50 per day with the use at stated periods of small parlors for Committees. The "Hotel Brunswick" near the Ocean, first class in every respect from $3.00 per day up to $20. per week. This Hotel has a series of small parlors on the main floor for Committees and private receptions, the use of the same is based on the number of Dental Convention guests at the Hotel.

In the large Hotels the use of the rooms for Committees and sections is based on the contract of a certain number of guests, therefore the selection of a room ahead in some Hotel is necessary, July 15th is the time most of the Hotels would like to know.

All Hotels have electric lights, baths and artesian well water.

In the small hotels the "Grand Central" rates $1.50 to $2.50 per day and $14 to $16 per week. The "Ashland" $2 per day and $8 to $12 per week. The "Portland" $2 per day and $8 to $10 per week. The "Edgemore" $2 to

$2.50 per day and $12 to $20 per week. The "Neptune" a nice quiet place $1.75 to $2 per day and $9 to $20 per week. The "Albany" $2 per day and $8 to $15 per week. The "Clifton" $2 per day and $15 per week. The "Strand" $2 per day and $10 per week.

The Committee will have an attendant at the Auditorium from July 27th to August 9th, to give information in reference to Hotels and other information to enquiring members. The trolley cars run direct from the depot to the Auditorium. A map of Asbury Park the cuts of the Hotels and the Auditorium will appear in the New Jersey Programme which will be mailed to every member of the American Dental Association.

CHAS. A. MEEKER,
C. W. F. HOLBROOK,
C. S. STOCTON,
Chairmen Local Committee.

ODONTOLOGICAL SOCIETY OF CHICAGO.

Resolutions adopted by the Odontological Society of Chicago, in reference to the death of Dr. J. J. R. Patrick, of Belleville, Illinois.

WHEREAS, death has removed from our midst, Dr. John J. B. Patrick, of Bellville, Ill., and there has passed from the scenes of human activity a character whose labors have enriched the stores of science, a man who delved fearlessly and steadfastly into those mysteries of nature which call forth the most subtle energies of the human mind, and yield results making the lives of succeeding generations happier, now therefore be it

RESOLVED, that in the death of Dr. Patrick, the world loses an honored citizen soldier, the field of science a conscientious, faithful laborer, and the dental profession a light whose extinguishment will kindle the profession's interest in the work he has accomplished for it, and thus extend and perpetuate his good influence. Be it further

RESOLVED, that to the family, friends and professional associates of Dr. Patrick, we extend the assurance that we appreciate his worth and are grateful that his life had been spared until it nearly completed the allotted time of three score and ten.

JAMES A. SWASEY,
ALISON W. HARLAN,
LOUIS OTTOFY,
Committee.

AMERICAN DENTAL ASSOCIATION.

The 35th annual meeting of the American Dental Association will be held at Asbury Park, N. J., commencing Tuesday, August 6, 1895, and continuing for four days.

A rate of *fare and one third for the round trip* upon the "certificate plan," has been secured. In order to get this reduction, full fare must be paid in going to the meeting, a *receipt* being obtained therefor from the ticket agent, at the *starting point.* If traveling over more than one line, secure a certificate over each line, or have the ticket agent at the starting point name in the receipt the different roads over which the ticket is good. This receipt (certificate), must be countersigned by the Secretary of the Association, and entitles the holder to return for one-third fare. Arrangements have been made to have the joint agent of the rail-roads present at Asbury Park on Wednesday, August 7, and it is desirable, that all who intend to attend the meeting, shall be in attendance, so that their rail-road certificates can be passed upon at that time. No rates have been granted over the lines comprised in the Western Passenger Association. Members residing west of Chicago should secure the best rates they can to the point, where they enter the territory in which the reduced rate prevails.

J. N. CROUSE,
Chairman of the Executive Committee,
2231 Prairie Avenue, Chicago.

Obituary.

Augustus Woodruff Brown, D. D. S. Died July 5th at his Summer residence in Manchester, Vt., aged ninety. He was born in Litchfield, Conn., and was the oldest Dentist in America at the time of his death. He practiced in New York City for half a century, and retired with a fortune, fifteen years ago.

He was at first associated with Dr. Solyman Brown, his oldest brother, whose name is one of the best-known of early Dental literature. In their office at 13 Park Place, New York City, the first Dental Society in the world was organized and the first Dental Journal planned. These were the American Society of Dental Surgeons, of with Dr. Eleazer Parmly was first President and The American Journal of Dental Science, of which Dr. Solyman Brown was first Editor.

Dr. Augustus W. Brown at one time had the most aristocratic and lucrative practice in New York, and was widely known in social as well as professional circles.

One of the earliest Honorary Degrees of the Baltimore College of Dental Surgery was conferred upon him.

He married Miss Emma Mandeville, who survives him. together with two Daughters. He had nine children, but none of his sons survived to manhood.

Dr. E. Parmly Brown, son of his brother Solyman, studied with him and is the only member of the family now in Dentistry.

Dr. Samuel W. Stocton, uncle of Dr. S. S. White, and the original Manufacture of Teeth in America, married a cousin of Dr. A. W. Brown's wife, a Miss Seeley, whom he met at Dr. Brown's house.

The funeral services were held at Manchester, and the interment was in the family vault in old Marble Cemetry, New York City.

Editorial, Etc.

PHYSICIANS ON THE CANADIAN BORDER.—Counsel Twitchell, of Kingston, Canada, writes to the Department March 27, 1895:

"I am informed through the public press—the information being verified by letter—that physicians living south of the Canadian boundary have recently been prohibited from attending patients living in Canada. I presume that the ostensible reason for this prohibition must be the alleged inferiority of the medical education of these practitioners and the consequent danger to the Canadian people. Of the professional competency of the physicians on the American side of the border, I know but little, but the indifference of some of the State governments in the United States to the qualifications of their medical practitioners is in marked contrast with the action of the Province of Ontario. For a number of years the United States seems to have been the dumping ground for medical students who did not apply for or failed to pass the examination required to qualify them to practice in Ontario. If this matter were fully understood by our State governments, I have thought that the instinct of self-protection, combined with State and national pride would cause them to require as high a standard of proficiency to practice medicine in their States as is required in Canada. During the year 1894, one hundred students graduated from the different medical colleges of Ontario. Of these, fifty-three passed the examination required by the medical council for the practice of medicine in Canada, leaving forty seven unaccounted for. I think I can safely venture the opinion that if the passage of the examination of the medical council had been required to practice in the United States, forty-seven more medical students would have fitted themselves for the examination."—U. S. Consular Reports, May, 1895.

Monthly Summary.

THE ADMINISTRATION OF CHLOROFORM.—Richard Gill, in the last volume of Saint Bartholomew's Hospital has an article entitled "Notes on Chloroform Anæsthesia," which, as it is based on large experience, will be read with interest. In conclusion Mr. Gill asks the question: "What is the best sign to be guided by, when chloroform is administered?" He comments thereon as follows:

"This is a question which does not admit of a general answer, because different rules have to be obeyed during the induction of anæsthesia, during long and short anæsthesia, and also when alterations are made in the patient's position. This much, however, may be stated concerning the induction of chloroform-anæsthesia: the pulse may be ignored, but the respiration must be assiduously watched. How do we know that the patient is unconscious? By the alteration which the breathing undergoes; it is no longer controlled by the will; it has become automatic. But the patient being unconscious, how do we measure the amount of chloroform which is safe for the purposes of continued anesthesia? By the size of the pupil. Sometimes the pupil is large and sometimes small, when unconsciousness is induced. The large pupil may mean narcosis; the small pupil is always the sure sign of safe anesthesia. The small, contracted or pin-point pupil is, then, the measure of anesthesia, and is unquestionably the safest sign to trust; for during anesthesia, and especially during prolonged anesthesia, the respiration may become imperceptibly labored, and its new character may escape detection, the more particularly by experienced administrators.

"But while the breathing is becoming impeded, the pupil is slowly dilating and losing its sensitiveness. This change in its character indicates that the extreme limit of anesthesia has been exceeded. The stage of narcosis has been entered upon, and it is the pupil, not the respiration that has given the signal. When the patient's position is altered, as from the supine to the lateral, the breathing becomes obviously changed. To rely entirely on the respiration would, in this new condition, lead to a return of consciousness. Here the pulse is of no use in determining the right amount of chloroform. Is the pulse of no further service? Undoubtedly. In prolonged operations it is the first to give signs of depression, and must be watched with care and attention, so that when it begins to fail, those means may immediately be put into action which are best known to maintain the flagging energies of the patient. It is thus collapse is anticipated, and, if not prevented, in some degree mitigated."—*Journal American Medical Association.*

THE INFLUENCE OF PREGNANCY ON CARIES.—Ruben Peterson, M. D., of Grand Rapids, Mich., read a paper with this title before the Grand Rapids Dental Society. We cannot do better than copy the doctor's own admirable summary of his observations: 1. It is probably true that dental caries is more liable to occur during pregnancy. 2. Dental caries is a disease characterized by a molecular disintegration of the normal constituents of the teeth. 3. The disease is caused by the action of certain pathogenic micro-organisms which produce lactic acid, which, in turn, decalcifies the enamel and exposes the dentine to the attacks of the bacteria. 4. It is improbable that lime salts are abstracted from the teeth to supply the needs of the growing fœtus. 5. More than enough phosphates are ingested to supply the needs of mother and child, hence the maternal teeth do not suffer from lack of nutrition. 6. During gestation osteophytes are found, showing an excess of lime salts in the system. 7. The true explanation must be looked for in some change in the oral secretions which thereby furnish a more favorable soil for the development of the mioro-organisms. 8. There is evidence to prove that the saliva is more acid during pregnancy. 9. This condition is probably due to the changes in the blood by which its alkilinity is diminished. 10. The analogy between this and the lithemic condition is striking. 11. Vomiting of pregnancy, while it may to some extent aid, cannot be considered a potent factor in the production of caries. 12. Neglect of the teeth during pregnancy cannot be proved to be more prevalent than at other times, and therefore should not be considered among the causes of caries.—*Dental Cosmos.*

THE SANITARY SIN.

The latest sensational discovery is the unsanitary kiss.

I met my modest Minnie by the wind-mill in the trees;
We walked among the lillies, those that neither toil nor spin
But a demon danced between us, and he howled above the breeze.
"You may love the little lady, her affections you may win,
But kissing is a sanitary sin."

I married her one morning in the church-yard down the lane,
Far away from the trouble and the turmoil and the din:
Ere the earth had made its journey round the orb of day again
We'd a baby girl, but never did we kiss our little Min,
For kissing is a sanitary sin.

Oh, we love each other dearly, but our lips have never met,
Though her silver threads are coming and my thatch is growing thin;
To the act of osculation we have not decided yet,
For we know, since fell diseases such a practice ushers in,
That kissing is a sanitary sin.

—*British Medical Journal.*

ANTRAL EMPYEMA OF TUBERCULOUS ORIGIN—A case of antral empyema, apparently of tuberculous origin, is recorded by J. Kekwick, in the *British Journal of Dental Science* of May 15. The patient, a woman aged 30, complained of the usual symptoms indicative of antral empyema. The left upper second bicuspid was extracted and a free opening into the antrum made through the socket. For twelve months local treatment, combined with change of air and the administration of tonics, was carried out, but to no avail, the patient's condition remaining practically unchanged. The pus being of a curdy character and the history of the patient led to a suspicion of tubercle, etc., and on the discharge being examined microscopically, the tubercle bacillus was found in large quantities. Constitutional treatment for tubercle, combined with the insufflation into the antrum every day of powdered iodoform, led to rapid improvement in the patient's condition, the discharge becoming less and the hectic condition which the patient had commenced to acquire being lost. The following reasons are given in support of the diagnosis: (1) The chronic course of the case, with no local causes such as loose sequestra; (2) the tuberculous character of the pus; (3) the amenability of the disease to iodoform; (4) the history of the patient (uncle died from phthisis; sisters suffering from phthisis, no signs of tubercle in the patient herself, but a queried history of tuberculous cervical glands—cicatrices); and (5) the bacilla in the pus which was washed directly out of the antrum through the nose.

DEAD TEETH.—"We often hear about 'dead teeth,' but I am very much opposed to the use cf the term 'dead tooth' unless the tooth is really dead. The term is unscientific in the majority of cases, and sounds badly to the patient. If a person thinks he has a dead tooth in his mouth he is apt to look on it with abhorrence and doubt its usefulness. If we call such teeth 'pulpless,' no such unfavorable impression is given, and we are far more accurate in our statement"—Dr. Potter in *Dominion Dental Journal.*

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ARTICLE I.

FIFTY YEARS IN THE LABORATORY;
OR
THE EVOLUTION OF THE DENTAL LABORATORY AS I HAVE SEEN IT.

L. P. HASKELL, CHICAGO, ILL.

What I shall have to say to-day will be largely personal history, as it will relate to my personal experiences of half a century.

Were the graduate of the dental college of to-day to be placed in the dental laboratory of fifty years ago, and attempt to construct a denture as then made, he would throw up his job, for such is the great advance made in tools and appliances, materials and methods; he would consider it almost impossible to construct a denture by the old methods.

In January, 1845, I entered on my duties in a dental office in Boston, or rather its suburb, Chelsea. At that time no one considered it necessary to obtain his dental education in a college; in fact, the only one in existence was the Baltimore, then in its infancy, and which remained solitary and alone for many years. A large proportion of dentists picked up their dental knowledge here and there, with the doors of the operating rooms and laboratories largely closed against them; no dental journals; no text-books crude; no dental societies, and very little intercourse between the members of the profession.

There was, however, an absolute necessity for a knowledge of working metals, as there was no dental depots to resort to for supplies of gold and silver plate and solder, so the dentist must learn to melt gold, refine his old plates and filings, roll his plate, and make solders.

As the average dentist was not successful in saving teeth, especially if badly decayed or abscessed, the necessity arose for cultivating skill in the construction of dentures, and as they were all of metal, it was not every one who made a success of it.

In taking impressions common beeswax was the only material used. The impression-cups were made by the tinsmith. My preceptor was the first dentist in New England, so far as I am aware, to take an impression in plaster, but it was years before it came in general use, and the material was of an inferior quality.

My first experience in the making of dies was in the use of tin. To do this the counter, or as then termed, the female die, was made first, by plunging the model, perfectly dry, in the lead. The removal of the model necessitated its destruction. A rim of several thicknesses of paper was placed around it and the tin poured in it. After a time, type metal, zinc, and brass were used. After I had been in practice for myself two years, I was led to try what was then known as "Babbitt's anti-friction metal," then just introduced into this country for machinery bearings. This, with some slight modifications I have used ever since, finding it the only alloy that has all of the requisite qualities for a dental die, and has greatly simplified the fitting of plates.

At this time, or at my entrance on the stage, spiral springs were an absolute necessity for retaining an upper plate in place, and so continued for many years afterward in the practice of many dentists, and I am informed are still considered a necessity in England. My preceptor was the first dentist in New England who first constructed a suction-plate, in the year 1844. If any one knows of any attempts prior to this I would be pleased to be informed.

The impression was taken in wax, the die made of tin, and the result very gratifying. To test the suction, he soldered a hook to the centre of the plate, placed it in the mouth, told the patient to suck it up, attached a wire to it, and suspended thereto an ordinary water-pail filled with water, and placed other weights on that. These plates were fitted to the palate, the "air-chamber" known as the Gilbert, being introduced later, came in general use; and still later what was known as the Cleveland or soldered chamber. I have, however, dispensed with all forms of air-chambers for twenty-five years, deeming them superfluous, in fact, in many cases highly detrimental.

The carved bone and ivory teeth had been displaced by porcelain teeth. The first I used of these were Alcock's, made in Philadelphia. These were followed by Stockton's, which were an improvement on the former. A few years later his nephew. S. S. White, who obtained his knowledge of the business from his uncle, established a factory under the firm name of Jones, White & McCurdy, and soon produced an article far superior to any thing previously made. In fact, as regards translucency and delicacy of coloring superior to any thing now made. But afterward, to increase the strength, these features were in a measure lost, as the increase of silex and clay made them more opaque.

Up to this time all dental goods were sold by druggists. This firm entered in the manufacture of other dental goods, and established dental depots in Philadelphia, New

York and Boston. They kept no supply of plate and solder, and the dentist, if he did not make it himself, resorted to the manufacturing jeweler for his supply.

Every tooth was soldered to the plate, and skill was required in selecting, grinding to the plate, backing and soldering full sets of gum teeth, an experience which few practitioners of to-day have had.

The use of gas for soldering was not known till a later date, and the alcohol lamp and mouth blow-pipe were the appliances then used.

Lathes were of rude construction. Emery wheels, and not coarse at that, were used for grinding. What a contrast to the modern dental lathe, electric motor and carborundums. The appliances for finishing were few and rude. Think of the various appliances used on the dental engine for finishing and doing fine work.

At the time I commenced the business, carved block teeth were being introduced. These, of course, were carved for each case, and for eleven years I was engaged in carving and mounting for our own practice and for the profession in the New England States.

My first experience in the laboratory was the preparation of the material, calcining, breaking in small pieces and grinding in a quartz mortar, quartz and felspur to an impalpable powder. These, together with clay or kaolin and coloring matter of the oxids were then mixed ready for carving. Oxid of gold and tin were used to produce the flesh color of the gum enamel.

Then there was the management of the furnace, constructed of fire-brick, and soap-stone covers and stoppers, with two or more muffles. The baking was done in the latter part of the day, and running sometimes in the night quite late. The work was not examined till morning. Carving, biscuiting, trimming, putting in the platina pins, enameling and baking of two sets was considered a day's work.

A considerable number of dentists learned to do this, but with varying success, as it required skill and taste which all did not possess. I instructed the fathers of quite a number of the present generation.

In 1852 an agent of John Allen's came to Boston to sell office-rights for the use of his new patent, since known as Allen's Continuous Gum Work. We purchased an office-right for $150, and have continued the use of it to the present time. For full sets this was the greatest advance made in prosthetic dentistry, and remains to-day the most perfect denture ever devised, for strength, durability, naturalness of appearance, healthfulness to the membrane and cleanliness.

Soon after the introduction of vulcanized rubber, dentists in various parts of the country made a combination of continuous gum and rubber, which had its run for several years, and was then abandoned. One dentist who made it for several years was afterward asked his opinion of it, and replied, "It was like the devil's tail painted blue, more ornamental than useful." The serious objection to it was like some other combinations, it made the repair too expensive.

Like some other "discoveries" this method has been discovered, or re-discovered, several times since, patented and presented to the profession as something original. The lesson to be learned from this is, that no denture should be put in the mouth which cannot be readily repaired at a fair expense.

I think it was in the year 1852, a dentist named Slayton came to Boston to introduce a method of inserting dentures on gutta-percha. I have in later years made use of it in what I call "emergency" work. As for instance, a physician came to my office at 5 p. m.; had several teeth extracted, impression taken, a plate of gutta-percha formed on the model, teeth arranged, and fastened to a rim of the same material by heat, and the gum contoured with a hot spatula; at 7:30, two and a half hours, he was eating his dinner with his new teeth at a restaurant. Also a temporary lower plate, made in the same manner in three hours, while the patient waited, lasted one year.

Also about the year 1852, a dentist named Levett came to Boston to introduce an enamel for gold plates. I was wearing a small gold plate and had it enameled, but in a short time it cracked off. It convinced me that enamel which could be baked on gold plate was merely glass, and not fit to be worn in the mouth. This is also one of the "inventions" which has been "discovered" several times and found worthless.

About the same time, or a little earlier, Dr. Loomis, of Cambridge, Mass., patented the porcelain plate, which has been improved on to some extent, and is still used by a limited number of dentists. A first-class, artistic denture cannot be made by this process, and is difficult to repair.

I think about the year 1855, Dr. Blandy, of Baltimore, introduced a metal he called "cheoplasty," for making cast plates. It was similar to Watt's and Weston's metals composed of tin and bismuth,

In 1858, then in business in Chicago, associated with Dr. Allport, I made a visit to Boston, and calling on an old friend, Dr. J. A. Cummings, he took me aside and showed me, in a confidental way, a vulcanized rubber plate, for which he said he had applied for a patent. The outcome and history of which you are familiar, with some to your sorrow in the contest with Bacon.

The introduction of this material caused a retrograde movement in prosthetic dentistry, and though it has its merits, has been a detriment to the profession, for so simple are its methods that it has enabled a host of incompetent men to foist themselves on the community, and also led many of the better class of dentists to abandon a class of work far superior, simply because the work was easier, and could be done by mere novices in the laboratory.

Dr. Allport has well expressed the idea in an address before the Boston Academy of Dental Science:

"He who has but moderate ideas of symmetry, harmony of expression and color, is constantly pained by the lack of that artistic selection and arrangement of artificial teeth which serves to restore to the face the shape and expression left on it by the Creator, the absence of which in artificial dentures stamps him who should be an artist, an *artisan—a mere mechanic—a libeller of the soul—a deformer of the human face divine.* That mechanical dentistry should have very largely fallen in the hands of this inferior class of practitioners will hardly be wondered at by those who have watched the history of this branch of the practice. For so simple are the modes of attaining tolerable mechanical results with the methods now usually employed in this department, that a high order of appropriate talent is, at present, seldom found devoting much time to it."

The most serious objection to the use of rubber is found in the fact that the retention of undue heat causes constant change in the alveola process, the exceptions to which are very rare.

In the early 60's, Dr. McClelland, of Louisville, introduced a material for plates which he termed "Rose Pearl," a preparation of gun-cotton and camphor. This was followed by an improved article called Pyroxolene, which made a very handsome plate, but proved a failure; I made several plates of it. Next came celluloid, a decided improvement on the other, and which has continued in use. I used it instead of rubber for four years and then abandoned it.

One of the more recent inventions has been the "Electro-deposit plate," professedly gold, but only a silver plate with a very thin deposit of gold on its surface. It has very serious objections, and those who have used it, so far as I know them, have abandoned it.

Though aluminum has been used to some extent for plates for many years, it did not prove a success till recently, on account of the difficulty arising from the presence of specks of iron in the metal, which rusting produced holes in the plate. It makes a firm and more rigid plate than any other metal and is easily swaged. I find the secretions do not affect it at all. By using the loop-punch a firm adhesion of the rubber is obtained.

Ever since the introduction of rubber and celluloid there has been a set-back to prosthetic dentistry till the introduction of crown- and bridge-work, which has made it necessary for the dentist to learn the use of metals, so that to-day prosthetic dentistry occupies a higher plane than ever.

Dr. Land is entitled to credit for the introduction of the "jacket crown," etc. But far greater is Dr. Parmly Brown's method of porcelain crowns and bridges, which seem to me the *ne plus ultra* of prosthetic work, its two important features being the non-mutilation of teeth and showing no metal in the mouth.

The introduction of porcelain work to such an extent has necessitated the invention of gas furnaces, so that one improvement after another has developed some almost perfect furnaces. The Parker, an open-flame furnace, has done most excellent work, followed by the Downie with a platinum muffle which seemed almost perfection, till recently Land has brought out a furnace, the "Revelation," in which coal oil is used. In this furnace no bellows is needed, simply a good draft in a chimney. The high fusing bodies have been fused successfully. I am using it satisfactorily.

Though there has been great improvement in the manufacture of teeth there is still room for more. One serious fault is the unnecessary multiplication of molds, sometimes done to satisfy the whim of some dentist, but oftener because the manufactures fails to realize the real necessities of the case. In the S. S. White catalogue of teeth are nearly one hundred molds of upper plain bicuspid and molar rubber teeth! Many of them so near alike it is difficult to distinguish between them; others so unshapely it is a wonder any one finds a use for them; but the most serious fault is found in the fact that even in the longest of them there is little porcelain above the pins. In grinding to articulate, this small amount of porcelain is often ground away, or so nearly so that what is left is broken off very soon. Not only this, but the rubber gum comes so near the crown that it is unsightly. In nearly all of these teeth the pins can be placed in a position to give longer cusps. The company, however, have been making some new methods in accordance with these suggestions.

There are too many molds with too little masticating surface; too often the lingual cusps of the upper teeth are too long; they should be shorter than the buccal.

In plain upper rubber bicuspids and molars twelve variations of molds would be all that is necessary, and consider how this would simplify the selecting of teeth by the dentist or the depot clerk.

These same faults exist to a variable extent in all makes of teeth. I would very much like an expression of opinion on the subject by dentists.

In the teaching of prosthetic dentistry in the colleges there are serious faults, the reasons of which are threefold.

1st. Too much of the student's time is occupied in the lecture-room, in the endeavor to teach him methods which can never be comprehended till he sees them done or does them in the laboratory.

2d. In the laboratory he is taught in classes, and not enough individually, and these classes so large as to be unwieldly.

3d. The demonstrators are too often inexperienced men, graduates perhaps of a previous year. In no place in a college is wide experience more necessary than in the laboratory.—*Ohio Dental Journal.*

ARTICLE II.

THE SUCCESSFUL TREATMENT OF CLEFT PALATE.

BY EUGENE F. HOYT, M. D.

To become truly proficient in any specialty requires a protracted and complex experience, to the exclusion of all other irrelevant subjects. No man becomes a master at one bound, and while this is true of all activities, it is preeminently true of all measures which have for their object the relief of human suffering. Other things being equal, the longer experience brings the greater skill. The author of a beneficent operation is guilty of a crime against humanity if he fails to make his discovery known, and furthermore, unless such an operation is performed so frequently as to attract public attention, or unless public attention is frequently called to it by means which are regarded as unprofessional, hundreds, and possibly thousands, may go through life in ignorance that complete relief is within reach.

Cleft palate is a malady not alone disturbing to the unfortunate individual who bears it, but disturbing to all who come within the sound of his voice.

It is not his voice *per se* which is so disagreeable, but that voice, when it is used in speech, becomes in many instances a medley of inarticulate sounds.

The mental suffering of a sensitive person having such a deformity is in most cases more acute than that arising from almost any other congenital defect, and this is especially the case with a comely young woman who has no hare-lip and no external evidence of her deformity. Yet her speech betrays her and her mortification becomes unendurable.

Naturally the afflicted one turns to her medical adviser, and just as naturally he refers her to the surgeon; and for seventy-five years surgeons have been attempting to remedy the defect.

There is no excuse for any interference which does not correct the speech. No other function is disturbed sufficiently to justify remedial action.

It is quite safe to say that the surgical operation has been attempted not less than ten thousand times, and it is quite true that more than nine thousand five hundred of these cases have been complete failures in restoring normal speech.

It is quite possible for a skillful surgeon in particularly favorable cases to close the fissure by suture, and obtain a surgical success, but the operation is nevertheless a failure, because the function of articulate speech is not restored by a mere union of the divided palate.

Normal articulation cannot exist where there is inability to make a perfect contact of the palate with the pharynx, and thus close the passage from the larynx to the nose. In cleft palate there is an absence of tissue which cannot be created by surgery, and however perfectly the sides of the cleft may be brought together and united, the palate is always too short to close the pharyngeal passage, and perfect normal speech can never be acquired where that passage remains open. Therefore it is that even surgical successes almost invariably become functional failures.

These insurmountable obstacles have been frequently recognized and acknowledged by eminent surgeons, and because of the utter hopelessness of success, operations have been largely discouraged. Nevertheless, others more daring and reckless have tried to overcome the admitted difficulties by resorting to what, in the writer's estimation, are most barbarous methods.

One of the latest to claim attention takes the child unfortunate enough to be born with a cleft palate, within a few weeks after birth, and cuts away the edges of the fissure, bone and all; then passes wire through the jaw-bones, reaching across from side to side above the gap. These wires are then twisted until the bones give way and the gap is closed. If the resistance is too great, the bone is divided horizontally on either side with a heavy scalpel. Oh, Surgery, what crimes are not committed in thy name!

It is exactly thirty years since Dr. Norman W. Kingsley, at that time in London, but now at 115 Madison avenue, New York city, invented an artificial palate which was original in its conception, construction and application. This instrument not only replaced the missing portion of the palate, but, being flexible and under the muscular control of the adjacent parts, the function of normal articulation was also restored. Thus a defective natural organ of speech was made perfectly serviceable by an artificial one.

It has long since passed the period of experiment. It is a complete scientific and practical success, With it very many people who were deprived of entry into society and into business have been released from their bondage, and permitted to associate with their fellows upon complete equality.

During these thirty years Dr. Kingsley has applied this instrument in hundreds of cases, to persons of all ages, from the child of six years to the adult of sixty, and to every conceivable form of fissure.

With the means thus furnished by a properly adjusted artificial palate there is no more reason to anticipate failure than there is reason to believe that a person cannot learn to speak a language.

With the older cases there are usually bad habits of speech, which must be broken up and a new habit formed. These bad habits of speech are due to inability, but, with the defective organ restored, the difficulties cease to be insurmountable, as is proven by the large number who are now wearing such appliances, and who are not suspected of having a deformity by those who hear them speak. This is pre eminently a fact with children, and especially if the child can be placed under proper training for articulation.

It matters little whether the fissure is large or small; whether it be confined to the soft palate, or becomes more complicated and involves the roof of the mouth and a division of the maxillary bones; or whether or not it is associated with hare-lip; in every case the effect of the cleft is the same in character, differing only in degree, and the same principles apply to the correction, variations of the instrument being made to suit each individual case.—*The Brooklyn Medical Journal.*

ARTICLE III.

DEAD TEETH.

BY JOHN G. RANKEN, L. D. S., ENG.

A paper read before the North of England Odontological Society.

I have adopted the following classification of dead teeth:

1. After heroic extirpation of a live pulp;
2. After removing a devitalized pulp;
3. After removing a putrescent pulp;
4. When there is abscess with fistulous opening;
5. When there is abscess without fistulous opening, a blind abscess.

1. This classification includes all teeth requiring root treatment and filling.

2. The first step in the treatment of all dead teeth is to so shape the cavity in the tooth that easy access to the canals may be assured. In some cases it is advisable that an entirely new opening should be drilled, especially in the case of front teeth, and sometimes in that of back teeth with small interstitial cavities leading to an exposure.

The second step is the removal of the contents of the pulp chamber and canal, having special regard to the risks of forcing septic material through the apex of the canal and thus infecting or irritating apical tissues. A fine watchmaker's broach, a barbed Donaldson, an orange wood point forced up the canal—the pulp thus ejected whole—or some other kind of nerve extractor passed well to the apex and quickly rotated will often effect the removal of the pulp in an entire state; or by means of a Moray or a Gates-Glidden drill, taking special care to avoid the perforation or making of a false opening through the root, the canal may be thoroughly cleared of *debris*. Enlarge the orifice of the canal, inject absolute alcohol, and dry with a hot air-syringe or by passing a fine wire heated in the spirit lamp flame several times up and down. The canals will now be in a fit state to receive whatever kind of root-filling material may be most favored by the operator.

3. The first two divisions of my classification "after heroic extirpation of a live pulp" and "after removal of a devitalized pulp," are so nearly akin that we may generally fix upon the same treatment in either case. At no time, after careful removal of every fragment of the pulp out of each canal, and the thorough drying out of the canals by means of the injection of alcohol and the use of the hot air-syringe, will the roots be in a more aseptic condition and in a more fit state for the practice of immediate root-filling, the means by which this class of teeth are most often filled. It is as well to remember that the removal of all pulp tissue—so necessary an adjunct in the case of immediate root-filling—is, as regards the buccal roots of upper molars, the small roots of bicuspids and the

anterior roots of lower molars a matter of no great certainty, and thus in such teeth immediate root-filling is not the infallible treatment it is claimed by many to be. Again, the objections to immediate root-filling after extirpation relates to the difficulties experienced of thoroughly drying the canals after hæmorrhage or any exudation which may have occurred during the operation, to the severe pain experienced by a patient during the forcing a filling to the apex of the canals, as is absolutely necessary for the root-filling to be a success; and again the great soreness and discomfort experienced in some cases for many days after the immediate root-filling has been performed. Often these objections do not exist, or may be easily overcome or endured if it is desirable or necessary to take time into consideration.

4. The third class, or those dead teeth as they exist after the removal of a putrescent pulp, are often difficult to distinguish from teeth having blind abscess, and the avoidance of a tightly closed in dressing is, during the first stage of treatment, a desideratum, as, on account of the stimulation of treatment, the active formation of pus, when not present, is often instigated. Having cleared out the canals, the walls of which, in this class of tooth, are often soft and moist, and especially favorable to the careful usage of a Gates-Glidden, the method generally followed is to place loosely in each canal some strong antiseptic dressing on cotton wool, leave it for a week, and a state of quiesence having existed for that time, a permanent root-filling may be introduced with safety in nearly every case.

The antiseptics used for this kind of dressing are: Perchloride of Mercury, 1-250, Carbolic Acid, Eucalyptus, Oil of Cassia, Iodoform, and others specially favored by individual operators.

Although the immediate root-filler maintains that as the contents of the pulp chamber and canals are the immediate cause of an abscess, should it exist in such cases, and that owing to the minuteness of the apical foramen in many teeth it is impossible to secure proper drainage, therefore, if the apices of canals are filled with a permanent filling, the pent up pus will somehow cease to exist; the primary cause being removed, all careful operators will favor the slower method of treatment, with, in the vast majority of cases, a greater percentage of successes.

5. In the fourth class we have teeth abscessed and having a fistulous opening in connection with the so-called abscess sac. This fistulous opening is generally a suppurating tract, in many cases opening on the gums in the immediate vicinity of the offending tooth; in some cases the tract is of considerable length, and opens at a point some distance from its origin. The patient generally complains of a gumboil making its appearance periodically, enlarging, bursting, and subsiding after discharging its noxious contents into the mouth, no pain being felt, as a rule. This class of dead tooth, provided the abscess is not of very long standing, and absorption of the apices of the roots has not occurred to any very considerable extent, is amenable to immediate root-filling.

The best method of treatment is to clean out the canals as well as possible, pass a fine broach or Donaldson through the apex of the root, and then to place as far down the cleaned out canal as one can, without exerting any great pressure, the needle of a hypodermic syringe, pack around the needle gutta-percha, fill the syringe with carbolic acid, screw it on to the needle, and gentle pressure will almost immediately force a certain amount of the acid along the suppurating fistulous tract and produce a white eschar upon that surface of tissue where the gumboil has been in the habit of forming. Having accomplished this, healthy granulation is stimulated, throughout the tract, the canal may, after the withdrawal of the hypodermic needle and gutta-percha, be dehydrated with alcohol, dried with the hot air-syringe, and immediately filled, the main filling also may be inserted on the same occasion with almost perfect safety.

Another method, where the hypodermic syringe is not at hand, is to wrap around a fine broach cotton wool soaked in a strong antiseptic, and by a pumping motion force the antiseptic along the whole tract.

The objections to the immediate root filling of this class of teeth, are: First, it is better to find out whether our treatment is likely to be successful before inserting a permanent filling and secondly, the teeth are sometimes in such a septic condition that the surrounding dentinal tubuli are filled with the products of putrefaction, as is evidenced from the great change in colour. This state many operators affirm it is desirable to get rid of as far as possible by the continual changing of strong antiseptics in the canals, after dehydrating with alcohol and the use of the hot air syringe. I believe that little result of any kind is gained by the last mentioned method.

6. My last sub-division treats of that class of dead teeth which are generally the least amenable to conservative treatment. I speak of teeth having blind abscess. They are primarily difficult of diagnosis; we get them sometimes pointing, when the diagnosis is easy, and the treatment simplified by making an opening over the spot indicated by the pointing pus, after treating the tooth as one having a fistulous opening; at other times it is impossible even after passing a broach through the apex of the root canals to get a discharge of pus following the withdrawal of the broach, and yet circumstances in the history of the tooth may seem to indicate the presence of a blind abscess; yet it is urged upon us by many distinguished and successful practitioners that even this class of tooth is amenable to immediate root-filling. This class of tooth is the one in which immediate root-filling is most dangerous and unjustifiable. It must be remembered that, although we may find the canal or canals entirely free from obstructive material, yet the apical tissues are very often inflamed, although quiescent, and it is necessary that, for a successful issue to be obtained, these tissues should be got

into such a state that, after the permanent closure of the root apex, no inflammation or collection of pus should be allowed to exist amongst the apical tissues as this might afterwards necessitate the removal of the tooth itself. In all cases of blind or suspected blind abscess, careful clearing of the canals—some operators even forcing a hole through the apical foramina until blood or pus drain down the canal—is of the utmost importance; leave the canals entirely free for a few days, and then loose antiseptic dressings on cotton wool should be inserted, and changed daily until they are withdrawn from the canals in a sweet and clean state.

If time is an object, the performance of rhizodontrophy is better by far than immediate root-filling, and in any case it is as well after filling the canals to paint over the roots of the tooth, using a camel-hair pencil, a mixture of double strength tincture of Iodine and Fleming's Tincture of Aconite.

In all cases the apical end of the root canals of the dead tooth should be permanently closed as soon as the canal is free from putrescent material, having of course allowed a sufficiency of time and correct course of treatment to have assured ourselves that the canals will remain clean.

The question arises, what is the best material with which to permanently close the root foramina so that no septic material may gain entrance into the root canal? That it should be antiseptic, easy of introduction—so as to be adaptable to the shape of the canal—and of such a nature as to reach the apex and yet be easy of removal should the necessity arise are the essentials of a root-filling.

Nearly every operator has his own pet root-filling, which he thinks is undoubtedly the best; some few of these I will very slightly touch upon. Gutta-percha points stand first in the field in answering most effectually the demands on a permanent root-filling. Three distinct methods of inserting them are employed in practice :—

I. The canal is thoroughly dried, mopped out with chloroform, and a suitable sized point driven carefully, with the aid of a root-filler, to the apex of the canal.

II. The canal being dried, a chloro-percha solution, which when thin seems as susceptible to capillary attraction as water, is forced into the canal about to be filled, then a suitable point is chosen and driven home, great care being exercised that none of the solution is forced through the apex, as disastrous results are likely to follow such a mishap.

III. A saturated solution of aristol in chloroform being worked up the canal in the same way as the chloro-percha solution and a G. P. point driven home; it is asserted by some operators that if any of the solution passes, as a result of pressure, through the apical foramen, no unfortunate result will follow, the aristol solution not being of an irritating nature.

Gold and copper were of a length and tapering fineness suitable to the canal to be filled, in conjunction with chloro percha, seems the next nearest to the ideal root-filling.

Gramme's copper canal points, in conjunction with bees'-wax, which by the aid of a hot bristle is first inserted into the canal, and, it is claimed, the dental fibrils also, seem to afford a large amount of satisfaction. The copper canal point having been slightly heated is forced into the wax, containing canal in much the same way as the G. P. points are forced into the canals containing chloro-percha solution.

Wood points soaked in a carbolized resin may be used in the same way as the metal points.

Celluloid strips having collodion as a conductor have recently been introduced by Mr. Tomes, and he claims that they make a most effective root-filling.

Bee's-wax passed into the canal in threads and a heated bristle passed up to melt the wax until the canal is filled, oxy-phosphate and oxy-chloride of zinc, plaster of Paris, and amalgam, of which Sullivan's on account of its antiseptic, preservative and strengthening action, is stated to be the best, all have their adherents.

Lastly, we have various dressings of wool, and such drugs as Iodoform, Eucalyptus, Oil of Cassia, Perchloride of Mercury (1-1,000), Carbolic and Creosote, which as dressings possess a large amount of merit, yet are not admissible as permanent root-fillings, although they are sometimes used as such.

I thank you gentlemen for your kind attention to what must have been, on account of its antiquity, somewhat dry matter to you, and hope that a severe criticism may be meted out upon my effort, in order that I may benefit by your matured experience.—*Dental Record.*

ARTICLE IV.

NUCLEIN.

BY. DR. E. BERGSTRETSER.

The physiological process that presides over the nutrition of the body, that guards it from the invasions of a myriad of ever-active foes, and that is ever busy in restoring worn-out parts of the animal economy, is at the present time receiving a most searching analysis. Nutrition, prevention of disease, and cure are not now looked upon as distinct manifestations of vital energy, but are considered to be the phenomena of one ultimate force.

The cell has long been known to be the unit of vital action, but just in what way muscular, nervous or bone tissue were evolved from muscle, nerve or bone cells has been a trying question to physiologists. Surrounding the nucelus and the nucleolus of cells is found a granular substance called the blastema, and this substance becomes endowed by the cell with a certain molecular force that gives it activity in assimilation, even after it has become separated from its parent cell. This blastema is the substance that the nucleus and nucleolus of the cell use to produce and repair their own tissues. All cells possess this granular substance, or blastema, in varrying amounts, and it has been found broken off, or isolated, in the blood serum. Late investigators seem to have established the fact that this granular substance, found so universally throughout the animal economy, in the structure of its cells, and separate and free in the blood serum, is largely produced by the multinulear white blood-corpurcles. As these cells circulate through the blood-vessels and tissues they are secreting or manufacturing this granular substance which the individual tissue cells constantly seize upon, and by virtue of the selective activity of their nucleus and nucleolus, differentiate into their own peculiar tissue. In a crude way the multi-nuclear white blood-corpuscles may be compared with the numerous milk wagons of a large city, dirtributing to their thousands of hungar constituents that most nourishing fluid.

This granular substance, so largely produced by the multinuclear white blood-corpuscles, has lately received the name of "nucelin," although this same term has long been applied to the chemical basis of all animal cell structures. The later use of the word "nuclein" is both to designate the derivation of the substance so called and also indicate the relation that it sustains to the various tissue cells of the body, in furnishing them with the nutriment on which their structure and existence depend. The phenomena of nutrition consists of a gathering and of a separating process. First, the white blood corpuscles, when the products of digestion have entered the circulation, take hold of them, and, by an active dyalitic process, convert them into the granular substance called nuclein. Thus

Primary assimilation is accomplished by cellulation, and not in the crude manner described as absorption, or asmosis. Second, the individual tissue cells then take from the nuclein, found everywhere in the blood serum, just such parts of it as are adapted to the production of their own peculiar tissue. This is secondary assimilation or in reality separation.

The chemical symbol of nuclein is represented as C_{27} H_{49} N, P; O . It is freely soluble in alkaline solutions; slightly soluble in water, and is colorless. Nuclein belongs to the proteids, and contains a remarkably large amount of phosphorous, which exists in the form of nucleinic acid. The nucleinic acid of the various nucleins derived from different kinds of cells is always the same, but it is combined with varying basic substances in these different nucleins. These varying basic substances on decomposition yield up the xanthin bodies—*i. e.*. xanthin, adenin, guanin and sarkin. When nucleinic acid combines with a base which on decomposition yields adenin, it could be called adenin-nucleinic acid, and in the same way we could speak of guanin-nucleinic acid, or sarkin-nucleinic acid. Nuclein is isolated from the other proteids by nature of its strong resistance to the process of peptic digestion, under which the other proteids succumb. After these general statements as to the nature and origin of nuclein, we will now look into the method that nature takes to defend herself from the invasion of the destructive organisms of bacterial life.

A short summary of Prof. Vaughn's historical sketch of the search that physiologists have made for the germicidal agent of the blood, and his critical deductions, in so far as they bear on the line of thought presented in this paper, may prove of interest. In a series of experiments conducted by Louis and D. Cunningham, in 1872, it was found that babteria injected into the circulating blood rapidly disappeared. The earliest germicidal discoveries with extra vascular blood were made by Grohsmann, in 1884, who, in searching for the cause of coagulation of the blood, found that anthrax bacilli, after being kept in plasma, were less virulent when injected into the circulation of rabbits. In 1877 Fodor showed the germicidal action of the circulating blood on anthrax cultures, and also demonstrated that after a while this same blood lost its germicidal properties, the number of anthrax bacilli again increasing. In 1888 Nuttall found the same results as Fodor obtained held true in reference to the germicidal action of the blood of various animals on bacillus anthracis, bacillus subtillis, bacillus megaterium and staphyloccus pyogencs aureus. He used defibrinated blood in these experiments. Nissen, working under the direction of Flugge, as did also Nuttal, concluded from his experiments that:

"1. Cholera germs and Eberth's bacilli are easily destroyed by fresh blood.

"2. For a given amount of blood there is a maximum amount of bacilli that can be destroyed.

"3. Blood whose coagulability has been destroyed by the injection of pepsin is still germicidal.

"4. Filtered blood-plasma from the horse is germicidal."

Buchner, with the assistance of Voit, Sittman and Othenberger, in 1890, made the following demonstrations:

"1. The germicidal action of the blood is not due to phagocytes, because it is not influenced by the alternate freezing and thawing of the blood, by which the leucocytes of the rabbit are destroyed.

"2. The germicidal properties of the cell free serum must be due to its soluble constituents.

"3. Neither neutralization of the serum, nor the addition of pepsin, nor the removal of carbon-dioxide gas, nor treatment with oxygen has any effect on the germicidal properties of the blood.

"4. The inorganic salts have in or of themselves no germicidal action. They are active only in so far as they affect the normal properties of the albuminates of the serum. The germicidal properties of the serum reside in the albuminose constituents."

From this last conclusion of Buchner's, Prof. Victor Vaughn takes decidedly different views. For how, as he suggests, could serum-album remain in the blood-serum after the latter had undergone thorough peptic digestion. The search for the germicidal constituent of the blood has also been pursued by Halliburton, who called it a cell globulin, which he obtained from the lymphatic glands. Christmas found a germicidal substance in the spleen and other organs that he prepared in the form of a glycerine extract.

The proteids of the blood-serum, as containing the possible germicidal agent, attracted such investigators as Bitter, Christmas, Emmerich, Tsuboi, Steinmetz and Low, but they all concluded that serum-album was the germicidal agent of the blood. It is to the credit of American physiologists that Prof. Victor Vaughn, of the University of Michigan, was the first to demonstrate ultimately the germicidal agent of the blood. He has shown by a large number of experiments that consisted of a complete process of peptic digestion of the albuminose constituents of the blood serum that:

"1. Serum-album is not the germicidal agent of the blood.

"2. The germicidal substance must belong to the proteids; otherwise it would be difficult to explain the fact that a temperature of 556 renders blood serum inactive.

"3. The only proteid likely to be present in blood-serum and which is not destroyed by peptic digestion is *nuclein*."

A detailed description of Prof. Vaughn's method of obtaining nuclein from blood-serum, which he was the first to do, would not be in a direct line at this time. It is only necessary to state that he used the blood-serum from rabbits and dogs. The whole process was, of course, conducted with perfect antisepsis, and was in its general details a thorough peptic digestion of the proteids of the blood-serum that could be affected in that manner, thus leaving isolated the nuclein.

The following series of experiments demonstrate Vaughn's conclusions quoted above:

Experiment I.—A nuclein tube was inoculated with the bacillus of *Asiatic Cholera*, and plates made from this gave the following results:

Time: Immediately. 5 min. 15 min. 30 min. 1 hr. 1½ hr. 22 hrs.

No. of Colonies: 2100 43 54 71 90 115 1200

That the alkali in which this nuclein was dissolved did not cause the decrease in the number of germs is shown by the subsequent increase.

Experiment II.—Staphylococcus Pyogenes Aureus.

Time: Immediately. 1 hour. 4 hours. 7 hours. 24 hours.

No. of Colonies: 4000 1720 1050 810 0

Experiment III.—Anthrax Bacillus without spores.

Time: Immediately. 1 hour. 4 hours. 7 hours. 24 hrs.

No. of Colonies: 100 43 10 1 0

Experiment IV.—Cholera Germ.

Time: Immediately. 1 hour. 4. hrs. 7 hrs. 24 hrs.

No. of Colonies: 470 45 1 0 410

The final increase in the number of cholera germs occurred both in the nuclein solution prepared from the serum of the rabbit and that prepared from the serum of the dog.

Experiment V.—Staphylococcus Pyogenes Aureus.

Time: Immediately. 1 hour. 5 hrs. 19 hrs. 24 hrs.

No. of Colonies: Countless. 22,000 12,525 155 0

Experiment VI.—Anthrax Bacillus without Spores.

Time: Immediately. 1 hour. 5 hrs. 19 hrs. 24 hrs.

No. of Colonies: 5000 165 0 0 0

Experiment VII.—Staphylococcus Pyogenes Aureus.

Time: Immediately. 1 hour. 4 hrs. 7 hrs. 24 hrs.

No. of Colonies: 5000 2500 1600 1200 0

Experiment VIII.—Anthrax Bacillus without Spores.

Time: Immediately. 1 hour. 4 hrs. 7 hrs. 24 hrs.

No. of Colonies: 43 7 0 0 0

Experiment IX.—Cholera Bacillus.

Time:	Immediately.	1 hour.	4 hrs.	7 hrs.	24 hrs.
No. of Colonies:	350	105	150	42	0

Experiment X.—Staphylococcus Pyogenes Aureus.

Time:	Immediately.	1 hour.	5 hrs.	19 hrs.	24 hrs.
No. of Colonies:	Countless,	25,000	5525	65	500

Experiment XI.—Anthrax Bacillus without Spores.

Time:	Immediately.	1 hour.	5 hrs.	19 hrs.	24 hrs.
No. of Colonies:	430	0	0	0	0

The volume of the solvent used to dissolve the nuclein in these cases was the same as the blood-serum from which the nuclein was obtained. Sterilized water was used as the solvent and it contained 0.12 per cent of potassic hydrate and 0.06 per cent of sodium chloride. In the last five experiments the sterilized water contained 1.2 grams of potassic hydrate, 6 grams of sodium chloride, and 1 gram each of sodium bicarbonate and disodium hydrogen phosphate to one liter of water.

These experiments are so absolutely conclusive, and of so great interest and importance to the dentist in the treatment of the pathological conditions that he finds in his work, that I have brought them into this paper. So far as I am aware, dental literature has not contained any reference to them.

When infection of the tissue takes place, at once the leucocytes rush to the place where the poisonous germs are at work. The nuclein is poured out all around the invaded tissues, and the retrograde metamorphosis is checked and repaired. But, if the disease germ is one of strong vitality and rapid growth, the struggle becomes most intense, and may end in defeat for the leucocytes, for the thyrode and thymus glands, the spleen, and red marrow of the bones, from which the multi-nuclear white blood-corpuscles are now thought to originate, can respond to only a certain extent, and when they become exhausted the field is left to the triumphant bacteria and their ptomaines.

Just in what way the nuclein of the leucocyte over-comes or destroys the nuclein of the bacterial cell is a difficult problem to solve. Vaughn suggests the manner in which this may be brought about: The nucleins of the multi-nuclear white blood-corpuscles are isomeric bodies, one being designated as the A compound and the other as the B compound, and one, by causing a rearrangement of the atoms of the molecule of the other, may absorb it. The molecule with the most vitality will rearrange and absorb the molecule of less vitality. In this way we can understand how disease germs at sometimes are victorious and at other times are conquered in their attacks upon the germicidal cells of the blood. That vital force plays a great part in the drama is demonstrated by the fact that anthrax germs flourish in the extra-vascular blood of the chick while that fowl is from birth immune to their influence, and the extra-vascular blood of the rabbit destroys these same germs, which prove rapidly destructive to the animal when introduced into its circulation.

In many animals we find the condition of *natural* immunity to certain disease germs. The chicken from birth immune to anthrax bacillus, but in most cases of natural immunity to certain disease germs the condition is not perfected until development of the body is matured. The young rat is susceptible to anthrax bacillus, while the mature rat is immune. The human adult is almost perfectly immune to many of the infectious diseases of childhood. We also have examples of racial immunity to certain disease germs, the negro being largely exempt from malarial diseases.

Artificial immunity to disease germs is induced by the introduction of germ nuclein into the body. By this means the organs that produce the multi nuclear white blood-corpuscles are stimulated to increased functional activity and a supply of nuclein is furnished which eradicates the germs. As we all know, this immunity is liable to fade out. Vaccination loses its protective effect, and a second attack of scarlet fever, diphtheria or measles is not an uncommon occurrence.

Conditions of health have a very important bearing as to an individual's ability to resist infection. Exhausted conditions of the system may result in allowing the entrance of infectious germs, because Nature is not at once able to rally her protective and nutrition-bearing white blood-corpucles to the scene of invasion. If a rat be exhausted by prolonged exertion on a tread-mill, he readily succumbs to innoculation from anthrax germs, although in normal condition he is immune to them. Climatic cures are not so much the result of removal from unhealthy environment as a stimulation to the nuclein producing-organisms.

We are greatly indebted to Metschnikoff for his theory of phagocytosis, but he failed to distinguish the fact that it was not the cell itself, but its product, nuclein, that was the germicide, and that it is probably most active after it has separated from the parent cell and passed into the circulation. The blood-serum of rabbits is germicidal, even after alternate freezing and thawing of the leucocytes, which is destructive to them. Spores inclosed in bits of parchment and introduced under the skin of rabbits were destroyed. This result was accomplished under conditions where phagocytes were unable to enter because of the parchment. This experiment shows that the germicide must be a soluble constituent of the blood. Against Metschnikoff's theory is also arrayed the fact that germs grow and multiply in the phagocytes themselves, and in this way the latter may become carriers of infection.

There is an intimate connection between the formation of uric acid and nuclein which directly interests us as dentists in study of the ætiology of pyorrhœa alveolaris. Herbaczewski has recently added some important discoveries as to the origin of uric acid. Heretofore the formation of uric acid has been accredited to deficient oxidation of those materials the completed product of which is urea, but in physiology it has been difficult to demonstrate this supposed relation. Herbaczewski has shown that the nuclein of spleen pulp produces uric acid, in the presence of an oxidizing agent like the blood. The uric acid obtained by oxidizing spleen nuclein is not a ready-formed substance of the nuclein, but is the derivation of a mother substance that also produces xanthin, sarkin, guanin and adenin. This mother substance, found in all nucleins, when split up in the presence of an oxidizing agent, produces uric acid, while xanthin, sarkin, guanin and adenin are formed when disintegration of this mother substance takes place in the absence of an oxidizing agent. This is the most satisfactory explanation yet produced as to the formation of uric acid in the animal economy. The formation of uric acid and the xanthan bodied is the measure of the amount of nuclein being consumed, which primarily means the number of white blood-corpuscles undergoing destructive metamorphosis. Excessive uric acid formation then means abnormal increase of the white blood-corpuscles or leucocytosis. When nutrition is very active, yet normal, as in the infant, we find a large proportion of uric acid; and when nutrition is running low, as in stages of fasting, there is a diminished amount of uric acid. Those diseases that disarrange and cause to run wild the nutritive processes are accompanied by excessive uric acid and xanthan formations, and we now understand, through Herbaczewski's demonstrations, that this is caused by excessive formation and destruction of the white blood-corpuscles, as they no doubt furnish the largest part of the nuclein of the blood.

If the uric acid diathesis be the ultimate cause of pyorrhœa alveolaris, the dentist who attempts to cure it by local treatment only exhausts himself in a fruitless endeavor. Therapeutics are on the verge of a great transformation. It being known that nuclein is an antitoxine and a tissue builder, the great problem is now to obtain nuclein so as to preserve its functional activity. The stomatologist cannot but feel an interest in these new discoveries and applications of cure to disease. Our knowledge of the manner in which Nature keeps the animal economy in repair, and defends herself from the invasion of her bacterial foes has been revised and enlarged. In the discovery of the functional importance of nuclein and its manner of production, a new realm opens up to the physiologist and the therapeutist. The spleen, the hepatic cells, the thyroid and the thymus glands and testes have been found to be sources of this most important factor in the problem of life, but it is highly improbable that so vital an element should be confined alone to these corners of the animal economy. It probably will yet be proven that nuclein finds its sources from all the nucleated cells of the body.

In the treatment of many diseases that come under his care the dentist has frequently overlooked the fact that Nature has a most efficient germicide, soluble and everywhere present in the blood-serum. The appalling list of escharotics and other powerful medicaments that are used in the treatment of pyorrhœa alveolaris under these circumstances appears often unnecessary after thorough surgical removal of the exciting cause. It is utterly impossible for the oral surgeon to perform a perfectly aseptic operation from the very nature of the local environment. Yet no other class of surgical cases heal so kindly. The blood supply of the face and head is so abundant that Nature seems to be able with her own germicidal agent, nuclein, to do far more than the best aseptic surgery can accomplish in any other part of the body. This should be a strong hint to all of us. If more dependence were put on cleanliness and thorough surgery, and less on powerful and irritating germicides, Nature, through her own superior means, would show us results that are now seldom attained.—Proceedings of Kansas State Dental Association.—*Western Dental Journel.*

ARTICLE V.

THE STRUCTURE OF THE MAXILLARY BONES.

BY DR. M. H. CRYER, PHILADELPHIA.

Dr. Cryer showed that the relations of the opening of the maxillary sinus are not what they have been hitherto understood to be; the roots of the great majority of premolar and molar teeth pass up into the antrum, only covered with a slight casing of bone, and in diseases of these teeth, abscesses will form in the antrum, the products of which will pass into the nasal chamber, producing catarrh, and other nasal troubles.

These and other facts, which open out new fields of investigation in dentistry and throw valuable light on the diagnosis of catarrh, were illustrated by means of the stereopticon. The front teeth were shown with the apex of their roots also penetrating the floor of the nasal chamber, producing various unsuspected results and Dr. Cryer demonstrated that in the lower jaw, the so-called inferior dental canal is really a cribiformed tube, suspended in the cancessated portion of the jaw, which constitutes a factor of supreme importance in the treatment of the teeth. The paper produced a sensation, and as one after another of the old landmarks of dentistry were swept away, there was much excitement.

The members of the association, however, were not altogether unprepared for new developments of the subject, for one of the significant features of its convention and that of the New Jersey State Dental Society, which was held in the same hall during the first three days of August, was a sense of expectancy. Papers on the application of electricity to dentistry were more numerous than at any previous convention, and the feeling of helplessness with which certain dental troubles have come to be attacked, even by the most skillful practitioners, is giving way to a hopefulness, or rather a belief, that electricity will form a powerful addition to the means by which the standard of the profession will soon be immeasurably raised. As one of the delegates put it: "We have not got far with electricity, but we feel that there are infinite possibilities in it for the strengthening of our resources. Ii may possibly prove to be the specific we have long been looking for for pyorrhea alveolaris, the mysterious diseased condition of the tooth in which the socket is destroyed and the tooth drops out. There are but few drugs of the classes of escharotics, antiseptics, and astringents which have not been tried as remedies. Each one has had its advocates, subscribers to its efficiency, and just as great a number have declared the same agent worthless. Many of the drugs have been described as almost specific in their action. Undoubtedly, a specific is what is wanted, but the first step to finding a specific remedy is to ascertain that the disease itself is specific. So that, in the same way as the use of certain electric currents has been the means of defining subtle forms of spinal disease, which previously baffled all attempts at diagnosis, we may possibly find in electricity the specific agency for the diagnosis and cure of pyorrhea, which is significant of, it may be, a dozen or more disease conditions."

That the science of dentistry is appreciably widening its scope is shown by the general understanding in the profession that the word "dentistry" has come to be too restricted to express the conditions of dental practice, and that the word "stomatology" will in future be substituted for it. Much emphasis was laid in the discussions which took place at Asbury Park on the deplorable fact that the general public is not educated up to a proper appreciation of dental science, and upon the necessity of agitation in the matter of school-teaching of knowledge relative to the teeth and their preservation. The statistics lately compiled of the state of the teeth of children in public schools throw an important light on the degeneration of the standard of health in young people of late years, and it is admitted that the care of teeth must form an important part of the hygiene of the future.

At a dinner of the dentists an insurance company representative, who was called upon to respond to a toast, said that to such an extent were insurance companies convinced of the importance of the soundness of the teeth in the determination of the fitness of applicants for insurance, that they were now giving teeth inspection the first place in the list of tests. Heretofore the state of the lungs, the heart, and the kidneys had been the primary considerations, but henceforth the examination of the mouth will be the first thing that the inspecting medical officer will proceed to in the case of insurance applicants. What was the use of anxiety as to the power of the driving wheel, the fit of the valve, and the stroke of the piston of the engine if the condition of the furnace were neglected, and insufficient provision were made for the proper combustion of the fuel on which the working of the whole machine depended?

In regard to the too general lack of appreciation, even among educated people, of the importance of early attention to the teeth, a clinician gave an instance which came within his experience just before attending the convention. A patient whom he had known many years told him that he was about to enter his son for the navy. The dentist suggested that the boy's teeth be looked to forthwith. When the parent questioned the necessity, he was informed that no matter what a candidate's general qualifications may be, unless his teeth are up to a standard he cannot enter either the army or the navy. After the examination which followed the dentist, who found the boy's teeth in a lamentable condition, had to tell the parent that, although everything possible would be done in the way of restoring the teeth, the chances of the boy's being accepted were about 3 to 2. He had urged attention being given to the boy's teeth for the last five years, but the boy simply refused to allow it, saying "he couldn't be bothered," and the parents had failed to do their duty and insist that the examination be made.

On a line with this experience was the paper of Dr. Richard C. Newton of Montclair, N. J., on "What shall be done for the teeth of the poor?" Dr. Newton showed that the question of how the poor can be induced to save their teeth is one of wide and vital importance. He had found that the teeth of the very poor are almost universally bad, and in most cases practically the only attention the teeth ever get is when they are pulled out. Bad and insufficient diet lowers the vital forcer, dental caries sets in, and with it a tendency to eschew proper foods and seek for softer and more highly seasoned dishes. This extends the mischief, for working people should eat food that requires considerable mastication—strong food, so called—like the black bread and beans upon which German peasants thrive so well. Poor people will not go to a dentist, even when urged to do so by their medical adviser, because of the expense. Dr. Newton believes that in a comparatively few years, such facilities will be provided that the poor will be able to have their teeth looked to gratuitously. He proposed that the New-Jersey State Dental Society should set the ball rolling, and celebrate this, the twenty-fifth year of its existence, by inaugurating a movement for the establishment of free dental clinics for the poor, and strengthen the bond of union that should exist between all the branches of the profession.—*New York Times.*

ARTICLE VI.

A DIGEST.

BY CARL FISCHER, D. D. S., ZANESVILLE, O.

In following dental literature the *pro* and *con* arguments about subjects of vital interest to dentists make it sometimes difficult to arrive at a definite conclusion. Following the teachings of authority blindly is not altogether satisfactory to the intelligent dentist, and experiments should always go hand in hand, to establish the truth of an investigation in one's own mind. When sulphuric acid came to the front as an aid to enlarge root canals, I made solutions from 30 to 50 per cent. of strength and found their action on tooth structure very slow. Calcium phosphate is scarcely attacked by the cold acid and of calcium carbonate we have very little. The acid to dissolve a tooth is nitric acid (of course to be used with judgment). The best way to use it is probably to add to a 50 per cent. solution of sulphuric acid enough to increase action, say 10 per cent. Dilute nitric acid will dissolve steel, while concentrated will not, therefore a steel broach cannot be used. The action of nitric acid varies with the concentration, 3 drops in water is recommended for stomatitis (Hare), while the concentrated form is a powerful escharotic. Where cauterization of the apical space is desirable, surely no objection can be brought forward. Dr. Barrett uses the strong acid in case of necrosis. To stop the action of nitric acid on tissue, soap is the best agent to employ. (Soap can best be dissolved in dilute alcohol)

Have you used Iodine and Cassia? (Dental Digest No. 2.) Does this mean alone or combined? or for what purpose? or is it a specific? Well both are irritants in a root-canal as far as my observations go, and help to break down tissue.

In reading Dr. Dudley's article on "Titles," no one can but feel the truth expressed in this timely article. I think with Dr. Mears (and if any one knows, he does) that a good dental college furnishes all the mental food necessary to become an excellent dentist. To do justice to both studies in four years means a fine education beforehand.

Ethics now and then have an airing in the dental journals, but it does not influence anybody in the slightest degree. Following the modern principles, honor becomes a back number. Not mentioning the common everyday advertising dentist, but turning our attention to the college professor, we find a special code of ethics for him. He does not think anything of blowing his horn till everyone becomes nauseated. So that his greatness may not be overlooked he never fails to mention that Dr. Miller shook hands with him or stopped at his house, etc. I know most graduates are not capable of separating the college from the profession, and the bitter feeling and knowledge of being used to enrich the college stays with them when they start in practice.

Coagulation of the albumen in the tooth has furnished a favorite topic for some time. Having practiced chemistry for many years, naturally I use my chemical eye to view such matters. In considering the discoloration of a tooth by an amalgam filling containing copper, we are told that in proportion as it discolors it saves a tooth. Why? I never saw it stated. It is due, not exactly to coagulations, but to the formation of copper albuminate, (which is now an article of commerce), analogous to the conversion of hide into leather through tannic acid. May not a dilute solution of a zinc-salt do the same thing? I do not know but zinc is an element which forms many combinations with other bodies. In speaking of the comparative penetrating power of chemical agents through albumen, one thing is not to be lost sight of, namely a glass tubule is not a dental tubule. The first is not effected by chemical agents, the latter is. Lime and magnesia neutralize carbolic acid, and zinc chloride is precipitated by alkalies.—*Dental Digest.*

ARTICLE VII.

THE DENTAL FILLING.

BY DR. JOSEPH HEAD.

Dr. Head reviewed the different substances that had been in vogue among dentists at different times, and showed their various merits and defects. The main trouble with teeth fillings is caused by the modern bugbear, the bacillus. Gutta percha, which was once used, forms a regular hotbed for bacteria, which it turns out in a very short time in incredible quantities. Amalgam fillings are open, more or less, to the same objection. This and cohesive gold are the only materials which are supposed to exclude bacteria, although such supposition is not yet confirmed. The fact that fillings can leak bacteria and still preserve the teeth would seem to falsify the fundamental principles of dental anæsthetics, but the saving clause, as Dr. Head pointed out, is that with a good filling the number of the bacteria is greatly reduced, and the presence or absence of a suitable culture is a most important factor in the process of decay. Bacteria, like all other animal forms, may be starved to death, and this is what often happens in colonies that have found their way into the tooth. Dr. Head attributes most of the failures of dentists in tooth filling to hasty preparation of the cavity or unskillful manipulation. He believed that if the best filling available—one of gold, either of soft or cohesive foil—were perfectly adapted to good enamel edges, it would preserve the teeth as absolutely as if the original enamel remained dense and uncalcified. The filling should be polished down flush with the enamel edges and a mush of amalgam rubbed in. Gold has now been the favorite filling of dentists for fifty years, and objections to it are out of date. Dr. Head had found that the use of it on the lines he had laid down effected a great saving of trouble and disappointment both to the patient and the dentists.—*N. Y. Times.*

Editorial, Etc.

THE TEETH OF OUR SCHOOL CHILDREN.—J. C. McCoy, M. D., in a paper on this subject read before the Dental and Oral Surgery Section of the American Medical Association, advocates training the children in the Public Schools the proper care of the teeth. Each State Dental Association should appoint a suitable committee to arrange a manual on the subject, then induce the Educational Board of the State to adopt such a manual as a text-book to be used by teachers and taught in our Normal Schools, requiring teachers to pass an examination upon the contents of the manual and teach the subject in the schools. Out of a school of 700 pupils where Dr. McCoy distributed printed slips, "Do you cleanse your teeth with a brush every day?" Do you cleanse your teeth with a brush twice a day?" 50 cleaned their teeth twice a day, 275 used the brush sometimes, while 175 did not own a brush.

Monthly Summary.

FILLING PULPLESS TEETH WITH FISTULOUS OPENING.—In the May number of the *Items of Interest*, Dr. C. N. Johnson, of Chicago, tells how he does this operation. The busy practitioner may not have time to resort to this proceeding, as described by Dr. Johnson. Now let me tell you how to do the operation, and do it quickly.

After getting a direct opening into the pulp chamber, and thoroughly washing out its contents with warm water from a syringe, apply the rubber dam, and dry out the pulp chamber with cotton and hot air, then with Gates-Glidden drills of different sizes, enlarge the canals to the apex; now twist a few shreds of cotton around a Donaldson broach, and saturating in pure carbolic acid and iodoform, use as a piston until the medicament appears at the fistulous opening, and do not cease until it does appear.

Now your tooth is ready to fill; do not wait a day or a week, but go right ahead and fill solidly to the apex. I use shreds of cotton saturated with chlora-percha, and a touch of iodoform, and have yet to see the first case of this kind come back to me for treatment in a practice of fifteen years.—Dr. Agnus D. Cameron in *Dominion Dental Journal.*

AFTER several years of observation I am convinced that there is no better method of treating the gums after all deposits are thoroughly removed from the teeth and the use of medicants as may be indicated than friction-massage with the fingers. The daily use of a simple medicated powder, especially at night, before retiring, is very essential, as the putrefactive action of food deposits and acid secretions are more destructive than during the day. Pumice or os-sepia should never be the ingredients of tooth powder to be used daily; neither should a stiff and large brush be used. It is a foolish idea that such a brush is beneficial; both lacerate and cut the gums away, exposing the necks of the teeth to the action of caries and the rapid wearing or notching of the cement. A brush of medium size and stiffness, intelligently used, with a powder containing an ounce of boracic acid to the pound of the usual formula, and an occasional friction-massage will ordinarily insure a healthy mouth. Children should be taught massage of the gums and the use of a brush with an appropriate tooth powder. Absolute cleanliness is also essential to the beauty and preservation of the teeth and health of the mouth. Parents should make an early call on a competent dentist on their behalf for advice and needed attention,—R. J Parrie, Cincinnati, O.

TRANSMISSION OF CHOLERA BY THE HOUSE FLY.—Craig (*Medical Record*) has made some careful experiments by feeding common house flies with a fresh boillon culture of the cholera spirillum. At the end of three days they seem uninjured, and when the intestinal contents were removed, with every precaution to prevent contamination from the exterior of their bodies, the nature of which was confirmed by culture experiments and the obtaining of the red culture reaction by the addition of acids to beef-tea culture. If the common house fly is able, without injury to itself, to carry and transmit the cause of cholera, its agency in the extention of epidemics is probably important and may be difficult to combat.—*Phila. Polyclinic.*

THE PREVENTIVE TREATMENT OF SEASICKNESS.—Chlorobrom, which is a solution of chloralamide and potassium bromide, is the latest remedy proposed for the motion sickness so terrible to many ocean travelers and railway tourists. From the results of its use in 300 cases reported by ship's surgeons in medical charge of steemers plying between Great Britain and the United States, Canada, India, Australia and New Zeland, Dr. M. Charteris, professor of materia medica and therapeutics in the University of Glasgow, reiterates in the *Lancet* of April 21st, that chlorobrom, judiciously taken, will prevent an attack of seasickness, or cut it short if it has already begun. He states, however, that no prophylactic benefit can be secured by the use of chlorobrom in long sea voyages unless for two nights before embarkation, the passenger depletes the stomach and bowels by taking a cholagogue pill. Persons who dread the voyage will be helped by a previous dose of the solution. On board the vessel, the diet should be spare and dry. No full meal should be indulged in, and soup, pastry and sweets especially should be avoided, and a hypnotic dose of chlorobrom should be taken for three nights, 2 tablespoonfuls at a dose for women and a tablespoonful and a half for men. For short voyages, beginning about 10 p. m., the passenger should take one dose of the size mentioned and immediately go to bed. Immunito from seasickness is obtained in the great majority of persons if these directions are followed, but if they are not, the result will be that the chlorobrom will have no effect in arresting an attack of vomiting. Teaspoonful doses given every 10 minutes until a tablespoonful or a tablespoonful and a half has been given, will, however, almost invariably check the retching and depression, which Dr. Charteris believes are due to irritation of the vomiting center in the medulla oblongata consequent upon the vomiting caused by the gastric disturbance due to the unusual amount and uniformity of motion.—*New York Medical Journal.*

PROTECTING PULPS.—W. Storer How, D. D. S., Philadelphia, Pa., suggests the use of one or two discs of rubber dam as a protection to pulps nearly exposed. The use of a drop of pure mastic varnish in the bottom of cavity will facilitate the placing of disc in position. The second disc may be spread with soft cement and placed cement down on the first, and burnished gently down. Other pulp protectors he suggests, such as thin gutta percha, paraffin paper, vulcanizable rubber, celluloid or mica discs. A piece of oiled mica, he says, makes one of the best matrices to be had, having in its favor thinness, smoothness, flexibility, resistance to acid action, shapability with scissors, to say nothing of cheapness. One of the best ways to fasten such a matrix in place is by using heat-softened gutta percha pressed against it on either side between the teeth.

THE APPLICATION OF THE RUBBER DAM.—I have never been able to understand how anything is gained by using small pieces of rubber dam. It should be large enough to well cover the mouth, cheeks and chin, so that it may be held and kept out of the way during operations. Many breaks around the necks of the teeth after the dam has been applied are due to punching the holes too near together. Punch them far enough apart so that the rubber will not be stretched in the interdental spaces, and be sure to punch holes enough. The ligating is easily done by allowing the thread to extend from tooth to tooth on the lingual side without a single knot. Black carpet-thread makes a good ligature, and its color makes it possible to detect any fibres which may be caught on the cervical border of a cavity.—H. Barnes, in *Ohio Dental Journal.*

LINING RUBBER PLATE WITH ALUMINUM.—Dr. Thos. Rhodes Pixton, of Philadelphia, gives a method of lining rubber plates, to give metal surface in contact with the mouth. He used aluminum rolled to twenty-eight gauge, annealed and carefully pressed and burnished to cast, using preferably the handle of a tooth-brush for this purpose. By using a small enamel chisel, small loops may be made in the aluminum for attachment of rubber. The teeth are then set up in wax as usual for rubber plate.—*Items of Interest.*

VULCANIZING BETWEEN METAL.—For the benefit of Dr. P. Z. Haight, and others, I give my method of vulcanizing between metallic surfaces. Before pouring the second half of the flask burnish pure tinfoil (heavy) on the lingual surface of the wax, letting it cover a part of the grinding surfaces of the teeth, and leave the edge of the tin free so that it will be engaged by the last pouring of plaster.

Before packing the case burnish No. 4 pure tinfoil on the model, and there will be no trouble getting perfect surfaces if the foil is not torn. Do not use anything but pure tin, otherwise there will be dark spots.—Geo. M. C. Barnard in *Items of Interest.*

AMALGAM.—Prof. J. Foster Flagg, in the *International*, says: Has amalgam any good qualities in itself? Have we any good alloys?

How many men know how to use it and get the best results? What curses have been heaped on its hallowed head? Where is the man who dares say he uses it? Anathemas come thick and fast from the M. D.'s of both old and new school, as if they were the Supreme Court to sit on its merits.

Several years ago, at one of the first meetings of our Odontological Society of Pennsylvania, one of its oldest and most prominent members went so far as to place on record in the proceedings: "All men, falling away from manipulative ability, lean on plastics." To-day he is experimenting to find an ideal alloy to help him out in his failures in gold. How sad such a record! Who among you so mean as to deny using it, and without "apologizing?"

I say it is one of the grandest filling materials we have, and while I have spent nearly thirty years in inventing power mallets and special smooth oval points for gold work, I confess I throw all aside very quickly, and while I delight to wield the electric or mechanical mallet in distancing time and space with gold, yet I use more amalgam to-day than ever before in my life.

I am thankful I had the courage and principle to stand by it, and recommend and show how much could be done when condensed under Japanese bibulous paper. To me it is a sheet-anchor for the class of cases every day coming to me from others. If you use amalgam and wish to make your practice a success with it, learn how to manipulate it and prepare your cases for its adaptation.—*Pacific Druggist and Physician,*

Dr. A. G. Johnson recommends the following formula for pulp devitalization:

R.	Arsenious acid - - - - -	gr. xx.
	Hydrochlorate of cocaine - -	gr. xxv.
	Lanolin - - - -	q. s. ft. paste.

Dr. C. N. Johnston says of small and tortuous canals, that while we may meet many which cannot be drilled out and filled solidly to the apex and yet which remain satisfactory, yet no man is doing his duty who does not make an honest effort to fill all that can be filled by skill and application, and to sterilize as perfectly as possible every canal he cannot fill. In case of a small canal, after reaming out the orifice to insure access, use a fine broach of piano wire to explore as far as possible, then flood with an antiseptic and work up with broach. In trying to fill such canals, some material should be used that is semifluid or entering, should be used so that it may be pumped as far as possible into all spaces.—*Cosmos.*

THINKING WITH THE FINGER TIPS.—According to a writer in the Arena the coming man will assuredly perceive and think in every part, from his head down to his feet. He bases this assertion on what, he says, may not be so generally known—that recent post-mortem examinations of the bodies of the blind reveal that in the nerves at the end of the fingers well-defined cells of gray matter had formed, identical in substance and in cell formation with the gray matter of the brain. What, he asks, does this show? "That a man can think, not alone in his head, but all over his body, and especially in the great nerve centres like the solar plexus and the nerve ends on the palms of the hands and the soles of the feet."

EROSION.—Nitrate of silver, when applied to an eroded part of a tooth, is decomposed; the oxide of silver—an insoluble and inert substance—is deposited, which protects and relieves hyper-sensitiveness, antagonizes the action of morbific influences, and assists nature to arrest the disease.—Geo. J. Fredericks, in *Pacific Druggist and Physician.*

ANTISEPSIS IN DENTISTRY.—Dr. Shrady, editor of the *Medical Record*, every once in a while indulges in a "fling" at dentists and dentistry. His latest is an accusation as undeserved as usual, at one sweep he accuses the profession of neglecting antisepsis. To one who reads dental literature and attends association meetings of late years, it is surely known that the average dentist pays more attention to cleanliness of instruments and of person than does the average physician. That surely is our own personal experience. If the egotistical editor of the *Medical Record* had taken pains to find the facts we believe he would have arrived at the same conclusion.—*Western Dental Journal.*

DECAY OF THE TEETH.—The dentist is confronted with three classes of diseased teeth—those in which the dentine alone is affected; those in which the pulp has been but recently exposed; and those in which, because of prolonged exposure, the pulp is either dead or dying. Of the first class I have already spoken. In a tooth of the second class, the pulp can be cured by the application of soothing medicines, which may remove the irritation and subdue the inflammation, and enable it to bear a filling. If, after being thus treated, the tooth be filled, a covering of secondary dentine may be formed by nature underneath the filling; for the better protection of the pulp, and soon the tooth may become as sound as ever.

Concerning the third class of decayed teeth, there are three kinds. Those in which the pulp has recently died, those in which there is more or less of infection and inflammation, and those with a fistulous opening, with a more or less constant discharge of pus. The first can be cured with comparative ease. The second may be relieved if judicious means are employed, while the third may require a considerable time, and the exercise of much patience and skill on the part of the dentist. The pulp chamber and canals must be thoroughly cleaned and disinfected, and this work is sometimes performed with great difficulty, as the canals are often crooked and difficult of access.

Should the dentist fill such a tooth, leaving within it particles of infected matter in the pulp canal, they may putrify and generate gases, which, having no escape except the opening at the apex of the tooth, press against the surrounding tissues, and produce abscesses and swellings, with their accompanying pains. After the whole territory has been thoroughly disinfected, the canals must be effectually filled. It is sometimes advisable to insert a temporary filling to last for several weeks, and only after this experimental stopping has been sufficiently tried, and no unfavorable symptoms have supervened, should a permanent filling be substituted for the temporary one. If, however, the tooth becomes sore, it is an indication that inflammation is again active, and that unless it be reduced an abscess may follow. The filling must then be removed, and the tedious work of disinfection resumed.

It is apparent, then, that to postpone the work of filling a a decayed tooth only increases the danger and suffering, while the result, when accomplished, is much less satisfactory, and much more expensive, painful and uncertain.—*Items of Interest.*

EXTRACTING AN ABSCESSED TOOTH.—"A" is suffering from an abscess developed from an irritation produced by a dead tooth. He is about to visit the dentist to have the tooth extracted, when some officious, though well-meaning friend, informs him that it is dangerous to extract the tooth before the abscess has broken, and "A" will suffer many days and nights of intense agony, waiting for the abscess to heal, and after this has taken place, and he no longer suffers torture, he undergoes the additional pain of having the tooth extracted. As a matter of fact, there is no danger in extracting a tooth about which an abscess is developing. There was a time when it was thought hazardous to do so, it is true, but this theory has long since been exploded. Moreover, the pain of extracting such a tooth is entirely lost in the far greater pain suffered from the abscess, for when one suffers from pains of varying intensity, the sensation of the lesser pain is, measurably, lost in that of the greater.—*Items of Interest.*

ROOT CANALS.—Many root canals met with in practice are small, indistinct, and difficult of access, so that they cannot be thoroughly cleared. For many years I have used a ten percent solution of bichloride of mercury in absolute alcohol, applied to the pulp chamber on cotton, wool or other fibre with great success. But since Dr. Miller's paper, read at the Chicago Congress, in 1893, advocating the use of a pellet formed of one-tenth of a grain each of bichloride of mecury and thymol, I have adopted this method in some two hundred cases, but using pellets of only one-fifteenth of a grain, and by far the larger number of cases were very successful. I do not advocate this treatment where the canal could be got at, as I am strongly in favor of filling all root canals where possible, but in almost inaccessible positions the plan suggested is valuable.—*Dental Record.*

DIGESTION.—The stomach may be compared to a stove; the food to the fuel consumed by the stove, and life to the heat given off by the glowing coals. The stomach is an excellent stove, and will burn much bad fuel. But have a care lest it rebel, and the fire be extinguished.

Good health demands thorough digestion; thorough digestion demands thorough mastication, and thorough mastication demands sound and healthy teeth. Ulcerated roots and decayed teeth; an inflamed mouth and vitiated saliva, are poorly fitted to supply the stomach 'with food that can be properly digested and assimilated.

Abscesses with agonizing pains, necrosed jaws and probable disfigurement of the face with tumors, and foreign growths, frequently result from a neglected mouth.

Diseases of the eye, ear, and the cavities of the head, often the most difficult to diagnose, may be traced directly to an unhealthy condition of the teeth. But a short time ago, I was visited by a young lady whose eyes were so badly affected that she could only see with difficulty. Medical treatment had failed to relieve her. Having trouble with her teeth, she found it necessary to consult the dentist, and with the curing of her dental troubles her eyesight was restored.

I have seen the most robust patients shattered in health by dental troubles. Who is not familiar with the acute suffering with which the development of an abscess, or swelling on the gums or face, is accompanied? The pain is not only agonizing, but the general health is affected. Surgeons and dentists are daily called on to perform operations for the removal of necrosed portions of bones, and tumors of the most formidable character, and sometimes even for the removal of the entire jaw. There is not a disease to which the human bady is liable that is not aggravated by an unhealthy condition of the teeth.

It is marvelous to observe how men will spend money in the most extravagant manner for outward show, or will wear away the best part of their lives in the accumulation of wealth, and yet never give a thought or a penny to the preservation of health. But there will come a day when disease shall so have wasted their system as to place its recovery beyond all medical skill, and then they will realize the full consequences of their neglect.—*Ex. from Bell's Mouth and Teeth.*

ARSENIC.—There are some dentists who promptly apply an arsenical paste to sensitive cavities, whether the pulp be exposed or not, and patients have been led to approve this, thinking thereby to avoid pain during the filling. But it is very bad practice, and the more reputable portion of American dentists condemn it earnestly, and for some of the following reasons:

First. Because when devitalized, there is always the liability to putrefaction and the formation of an abscess.

Second. Because it is much easier to fill a live tooth than a dead one.

Third. Because a dead tooth is liable to many diseases, and is not as permanent or as useful as a live one.—V. C. Bell in *Items of Interest.*

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ARTICLE I.

THE ADULTERATION OF DRUGS.

BY WILLIS G. TUCKER, M. D., PH. D.

A Lecture delivered before the Brooklyn Institute, May 24, '95.

Pure air to breathe, and pure food and water to eat and drink, are perhaps in a sense matters of more importance to the community than pure drugs to use in sickness, because the normal condition of the body is health, and if this be maintained by respecting the laws of nature, and living well-ordered lives amid sanitary surroundings, we shall have little need of medicine, but, unfortunately, many of us do not respect these laws, or we are unwilling or unable to live in a healthful environment. Through hereditary influences, moreover, for which we are in no wise responsible, many of us come into the world badly handicapped in the matter of health, and, hence, as a result of unwise living, bad surroundings or natural taint, we fall a prey to disease and need the physician's aid. Hold what view we may as to the real efficacy of the medicines which he administers, the great majority of us take more or less of them in the course of our lives, and when we *do* take them we are naturally desirous that they be pure and properly compounded. Absolute purity or precise strength may not in all cases be matters of supreme importance, but the feeling is not only natural, but entirely justifiable, that, if medicine is in any sense a science, the medicinal agents employed in the treatment of disease should be administered with some approach to scientific precision. Looked at in this light, therefore, nothing is unimportant, and the pharmacist who would be the true ally of the ideal physician must take this view of his calling and practice it as a profession and not as a trade. In other words, he, no less than the physician, must be imbued with the scientific spirit, and regard accuracy and precision in the practice of his art as of no less importance than business integrity in the conduct of his affairs.

The first question that we may well ask is: What constitutes adulteration? Our latest dictionary, the "Standard" says that to adulterate is to "make impure by the admixture of other, or baser, ingredients," and this definition is practically the same as that given by most other lexicographers, and it is the meaning which we ordinarily attach to the term. But the word as used in our statutes, and by analysts, has a much broader, and often a very different significance. A great many articles *are* intentionally debased by the addition of cheap make-weights with fraudulent intent. Thus, among foods, for example, glucose is added to maple syrup; starch and gypsum to cheap confectionery; roasted cereals to ground coffee, and all sorts of rubbish to ground spices, but of this kind of adulteration, there is, according to my experience, comparatively little in the manufacture and preparation of drugs. The adulteration of drugs does not generally consist in the direct and intentional addition of foreign material, but in the substitution of articles of inferior quality, or of inferior and sometimes of executive strength. The "Public Health Law" of this state, being chapter 661 of the Laws of 1893, defines in section 41, article 111, adulteration, in the case of drugs, as follows: "An article shall be deemed to be adulterated within the meaning of this act: 1. If when sold under or by a name recognized in the United States Pharmacopœia, it differs from the standard of strength, quality or purity laid down therein. 2. If when sold under or by a name not recognized by the United States Pharmacopœia, but which is found in some other pharmacopœia or standard work on materia medica, it differs materially from the standarn of strength, quality or purity laid down in such work. 3. If its strength or purity fall below the professed standard under which it is sold." Therefore if one article be substituted for another, as common safflower for crocus; or if an article, originally of good quality, has deteriorated by age or exposure, as may happen in the case of such articles as diluted hydrocyanic acid, ammonium carbonate, or magnesia; or if, owing to careless or improper manufacture, an article contains foreign matter, whether intentionally added or not, as alkaline carbonates in the bromides or iodides, or calcium sulphate in precipitated sulphur; or if it be deficient in strength, or of excessive strength, as is often the case with the diluted acids—then such an article is adulterated within the meaning of the act. It is well that this be distinctly understood, because the common opinion is that only those articles are adulterated which are intentionally debased, and that such adulteration is very common, whereas the fact is that such an adulteration of drugs is by no means extensively practiced. I do not say that it does not occur, but it is by no means as common as is generally supposed. The inferior drugs that are sold in our stores are for the most part inferior because articles of lower grade, perhaps not even included in the pharmacopœia, have been purchased because cheaper, or for the reason that they have been carelessly or ignorantly prepared or preserved, and not because of intentional admixture of foreign material, and it has taken pharmacists a long time to understand this matter and recognize the fact that they are responsible for the goods they dispense, and that it is their bounden duty to know the quality of the articles in which they deal. They cannot shift this responsibility to the manufacturer or the wholesaler. It is the business of the pharmacist to know the different grades of the articles which constitute his stock in trade; to select them with careful discrimination; to preserve them in a proper manner; to test their quality, if need be, and adjust their strength, when necessary, and to use due care in the preparation of such articles as he himself manufactures, so that they shall be of the quality and strength that the pharmacopœia demands or established custom requires. In other words, the pharmacist should be a skilled workman, and not a mere retailer of commodities. The public regard him as proficient in his particular calling and have a right to expect expert service when they present prescriptions for his compounding, and if he is satisfied to dispense whatever he buys from the maker or the wholesaler, without inquiry or warrant of any kind, or test of his own making, he has no right to claim the title of pharmacist, nor to charge for the materials he furnishes more than they are worth in bulk with a fair retailer's profit added thereto. The public are ready to pay and expect to pay him not only for the drugs he compounds, but for the skill employed in selecting, preparing, preserving and properly compounding them, and if this skill be lacking, they are defrauded and the imposition is the more culpable because the matter may be one in which health or even life is at stake.

This is perhaps not the place to discuss at any length the duties and responsibilities of the pharmacist, or the present condition of American pharmacy, but a few words upon some of these matters may not be out of place in this connection. We have said that the pharmacist should be imbued with the scientific spirit, and from the outset, he should be taught to regard his calling as a profession. It is unfortunate that he is at present, in a sense, required to combine with his legitimate trade in drugs, a trade in sundries, some of which are in no way related to his real business. There is no reason why he should deal in non-medicinal beverages and fancy goods like toilet articles, to say nothing of cigars, books and periodicals, and the odds and ends of all kinds, which, while adding to the volume of his trade, detract from the dignity of his legitimate calling and the proper conduct of his business. But so it is, at present, and all that he can perhaps do is to magnify in every proper way the importance of that part of his work which *is* legitimate, and minimize so far as he can that part of it, the very existence of which is to be regarded as an outgrowth or excrescence. If the necessities of the case require him to deal in such articles as have been named, let him at all events so arrange his store and dispose of his stock that they shall not occupy the place of prominence. There are some drug stores, the true nature of which it would be difficult to determine on a hasty inspection, were it not for the decorated jars and colored show-bottles which adorn the windows, or the gilded and illuminated mortar over the entrance, which serves as a sign by day and a beacon by night.

The outlook in some respects is encouraging, but influences are at work which we may hope will eventually raise the business of the druggist to the plane upon which it ought, from every right consideration, to be established, and among these may be mentioned the legislative action which has been taken, within recent years, in our own and in other states. We can not hope that legislation will accomplish any great reforms suddenly. Too much should not be expected from such action, as we shall presently more particularly point out, but the fact is by no means to be ignored that in forty-four of the states and territories we now have pharmacy laws, which, to some extent at least, regulates the sale of drugs and poisons, and prohibit adulteration, and these laws, though enforced with varying degrees of efficiency, have yet done something, and may be expected in the course of time to do more, to elevate American pharmacy and protect the public. The examination, registration and licensing of pharmacists, to the end that only those who have shown themselves capable shall be allowed to dispense medicines, is a step in the right direction, as are also definitions of adulteration and the legal establishment of standards.

Most of these pharmacy laws follow pretty closely the English statutes, and though in some cases their enactment has been opposed on the ground that they interfered with individual rights and unnecessarily hampered business, they are now pretty generally conceded to be right in principle, and on the whole, productive of fairly good results in practice. Professor Oldberg of Chicago has recently offered for consideration and discussion a draft of a proposed pharmacy law in which provision is made for the licensing of stores of different grades, as follows: 1. Those under the management of a registered pharmacist in which poisons and potent remedies may be sold, to be known as pharmacies of the first class: 2. Those under the charge of a registered pharmacist, or assistant pharmacist, in which poisons and potent remedies shall not be permitted to be sold, to be known as pharmacies of the second class; 3. Those conducted by licensed druggists (as defined in the act) in which the preparation and compounding of medicines is prohibited, to be known as licensed drug-stores. The principle involved in this proposed legislation seems to me to be correct, but whether such a classification could be practically made and maintained I do not pretend to say. Be this as it may, the State is certainly coming to deal more definitely than ever before with the relations existing between its citizens, and many new laws regulating the practice of the professions and the conduct of many of the trades, have, during recent years, been enacted. Our pharmacy laws belong to this class, and it is all-important that pharmacists should understand the nature of the evolution which is taking place, and should conform to the new demands which are made upon them. Our colleges of pharmacy have no unimportant part to play in bringing about the reforms which are so greatly to be desired. They should not only impart scientific instruction, but they should explain the legal provisions which govern the practice of pharmacy and impress upon their students the fact that they occupy an important place in the community, and are, in a sense, public servants with well-defined and highly important duties to perform. In a state like ours, in which the duties and responsibilities of the pharmacist are, to a certain extent at least, defined, he can not plead ignorance of the law as an excuse for non-compliance with its requirements. With new responsibilities come new opportunities and new honors also, and he is lacking in proper self-respect and proper regard for the dignity of his calling if he seeks to evade these responsibilities and prefers to fill the place of a tradesman rather than stand forth as a skilled workman in a scientific pursuit. And as the demands upon him are multiplied, so should his compensation be increased. His charges for services rendered should be proportioned to the skill required of him, and to the investment of time and of money which he has made in preparing himself to serve the public properly and legitimately. May we not hope that the time is not far distant when "cut rate" drug stores will be no more; unfair competition a thing of the past; charlatanism of all kinds banished from this business, and the practice of pharmacy, conducted by educated men alone, raised to the place which it ought to occupy among scientific pursuits?

That many abuses exist at present is implied in what has been said, but for many of these, the pharmacist himself is by no means responsible. Manufacturers have flooded the market with proprietary preparations and quack nostrums of all kinds, and these things, many of them of no value, the pharmacist is expected to keep in stock. In this respect, he occupies a very uncomfortable position, for if he denounces them as frauds and refuses to keep them, trade goes elsewhere and seeks those who are less punctilious and less deserving, and if he continues to sell them he feels that he degrades his calling. Another class of manufacturers, the manufacturing chemists, have put upon the market a bewildering variety of pharmaceutical preparations, the sale of which is, in many cases, supposed to be made only upon the physician's prescription. These are frequently changed, and they are multiplied from day to day. The manufacturer sends his agent, who calls upon the physician in person, recommending his products and leaving samples for his use, and by this personal solicitation, combined with the generous distribution of samples and lavish advertising in the journals, his goods are pushed into prominence, and the pharmacist must carry them in his stock, often at great risk, and not infrequently at a loss, or lose his patronage. I shall not attempt to say how these abuses may be remedied, merely suggesting that as a result of concerted action among druggists, which would be possible, if, as a class, they were better organized for the protection of their own interests, and with better legislation, perhaps, the sale of quack nostrums and cure-alls, at the least, might be greatly lessened if not largely suppressed. The other evil referred to, the multiplication of non-official pharmaceutical preparations, is one not so easy to deal with. Many of them are of great value and constitute welcome additions to our materia medica, but their name is legion, and no one, I take it, will affirm that we need them all. So rapidly, however, is their use increasing, that many physicians depend very largely upon them, and seldom write prescriptions in the true sense, in which recognized medicinal agents are, either singly or combined with each other, prescribed with special regard to the particular case under treatment. Instead of so doing, they use some laxative or alterative; some tonic or sedative; some febrifuge or stimulant, of the real nature and constituents of which they have often but a general and very hazy knowledge, kindly obliging the manufacturer by specifying so and so's make in the prescription. Now I maintain that this is very largely wrong, and that such a method of prescribing leads to many abuses and degrades medicine. It leads to the unauthorized duplication of prescriptions and to the general use, and often gross abuse, of remedies which ought to be taken only upon a physician's advice, and it limits the need for trained pharmacists and takes from such, a large share of their legitimate business. The sale of tablets, which has grown to such proportions of late, illustrates my meaning. Reputable physicians tell me that they find themselves, almost against their will, prescribing combinations of remedies in this form in a manner almost as arbitrary as if they ordered the use of somebody's purgative pellets, anti-neuralgic pills or sedative elixir. They are so convenient to dispense or prescribe that they are led to abandon the use of standard preparations, and in their stead, dole out these handsomely prepared and often highly ornamental discs, the composition of which they often forget and perhaps never have known. And their patients know them by name, get them in quantity, use them *ad libitum* and recommend them to their friends as occasion seems to require.

For abuses of this kind, physicians are themselves to blame and not the pharmacists, and it seems to me high time that this matter received the attention which its importance demands. If medicine is a science, and pharmacy, at the least an art, is it not time that the physician returned to a more rational method in the treatment of his cases? If not, he might as well abandon the study of materia medica and pharmacology; fill his case with empirical remedies, and admit that he has little use for the service of the educated pharmacist. But I trust that he will be reluctant so to do, and I look for an agitation of this matter which will lead to an abandonment of many of the preparations he now employs and a return to a more rational method of treatment. This is a matter which physicians and pharmacists may well consider together.

The New York State Board of Health was created by legislative enactment in 1880, and prior to that time there had been little legislation in this state on the subject of food adulteration, and practically none at all relating to drugs. In 1881 "an act to prevent the adulteration of food and drugs" was passed, being chapter 407, and it was made the duty of the State Board of Health "to take cognizance of the interests of the public as it relates to the sale of food and drugs and the adulterations of the same, and make all necessary investigations and inquiries relating thereto." Under this statute the Board appointed ten analysts to whom were entrusted investigations along different lines and voluminous reports were made by these analysts and printed in the second annual report of the Board. At a later date the number of analysts was reduced, and in 1891 the State Board of Health Laboratory was established and the entire chemical work of the Board was placed in the hands of the present director. Having been connected with this work from the outset, I have had occasion to examine a very large number of samples of drugs, more than 10,000 in all, and as these samples have been collected in almost all parts of the state and represent a wide variety of articles, it is possible that some of the results obtained may be of interest if briefly stated.

The term "drug" as used in the statute referred to includes "all remedies for external and internal use," and the public health of 1893, which repealed the law of 1881, gives a similar definition. The work which has been done by the State Board, however, has been confined almost exclusively to the examination of pharmacopœial articles, and the more espically as the pharmacopœia is recognized as an authoritative work, both by custom and legal enactment, and that we have in this work a definite standard of strength, quality or purity, for most of the articles included therein.

During the years 1861-1894 inclusive, 8,305 samples of drugs, chiefly pharmacopœial, were examined. Attention will presently be called to some of these, but in a general, way, it may be said at the outset that the object of the work has been not the determination of the proportion of adulterated to pure drugs as found upon the market, but the exposure of actual adulteration, substitution, sophistication and carelessness in the preparation of common drugs and pharmacopœial compounds; the warning of dealers and the publication of the results of the examination of samples obtained from them, and the information of the public. Therefore, no attempt has been made to collect a wide variety of articles, and such as are known to be seldom adulterated or of inferior quality, have not been collected, but such substances have been selected as would best test the knowledge, accuracy and integrity of the dealer. In the collection of samples, in every instance, the collector has tendered a written order, and this order has given the official names of the articles called for and the amount desired.

Now, the results of the examination of these 8,305 samples will, at first sight, be surprising. Of the total number, but 47.4 per cent. could fairly be rated as of good quality; 14.8 per cent. were of fair quality; 29.6 per cent. were inferior; 4.4 per cent. were of excessive strength, and 3.8 per cent. consisted of articles wrongly sold, or not as called for. These percentages, however, by no means represent the proportions of good, bad or indifferent drugs on the market and on sale at the stores, since only those articles which were considered likely to be adulterated or known to be frequently of inferior quality, were collected. Had samples of drugs and pharmaceutical preparations been selected at random, the proportion of pure and good articles would have been very much larger.

Concerning the above classification or rating of the samples examined, it may be said that in the case of those articles in which the pharmacopœia established a definite standard of strength, as for instance in the case of the diluted acids, like hydrocyanic or hydrobromic, then an article must be either good or bad according as it does or does not conform to this standard, but such a method of rating would be manifestly unjust. It is not to be expected that medicinal articles can be prepared with the same precision that a chemist would employ in the making of a standard solution, and we therefore allow for some variation within remarkable limits. In our reports, samples are classed as of "good quality" when they fulfill the requirements of the United States Pharmacopæia or vary from the same only in some unimportant respect; of "fair quality," if, while not fully up to the pharmacopœial standard, they are evidently neither intentionally adulterated nor decidedly below such standard, and of "inferior quality," if clearly adulterated or falsified, lacking in any important constituent, deficient in strength from improper manufacture, partial or complete decomposition or other causes, or containing an undue amount of impurity. In some cases, through ignorance or intent, a wrong article is sold or some inferior article of a nature similar to that called for is substituted, and such samples are classed under the head of "not as called for." Articles like the diluted acids, possessing excessive strength, are classed under that head.—*Albany Medical Annals.*

ARTICLE II.

GLASS FILLING, JACKET CROWNS, AMALGAM, GOLD CAPS, BRIDGES, ETC.—A SCRAP OF THEIR HISTORY.

BY WILLIAM H. TRUEMAN, PHILADELPHIA.

"In cases where a cavity is in front of a cutting tooth, the amalgam stopping is objectionable from its metallic appearance; but, if a small piece of thin platina be cut so as to fit the mouth of this cavity, and on each side of this a few catching points be soldered, glass, the color of the teeth, may be fused on one side, and the cavity being party stopped with amalgam, the catching points on the side uncovered by the glass, are pressed into the amalgam firmly, in the course of an hour or two the glazed platina becomes fixed by the hardening of the amalgam; this operation, if neatly performed, must give the greatest satisfaction to the patient. It is two years since the idea of trying the experiment suggested itself to me, since then I have often practiced it, and I can say always satisfactorily.

"When teeth are very much decayed, discoloured, or have their enamel much injured or disfigured, caps of gold, platina, or palladium, may be stamped up to fit them with the greatest exactness; the fronts of these dental caps must be glazed, and they can then be worn with much benefit."

The above paragraphs are taken *verbatim et literatim* from a "Popular Treatise on the Structure, Diseases, and Treatment of the Human Teeth," by J. L. Murphy, published at London, England, in 1837, pages 200 and 201 (No. 1594, "Dental Bibliography," by C. Geo. Crowley.) Of the glass used for this purpose he says: "Glass of any colour, may be bought in cane ready for use. All dentists ought to be provided with some of various colours, as it is useful in many instances." He gives minute directions regarding the construction of suitable furnaces for baking porcelain teeth, and various formula for preparing bodies and enamel. On this point he says: "A good composition for teeth may be made of silex, two parts; potash, two parts; dry potter's clay, one part; these must be well beat up together so as to be perfectly mixed. They had better be put in a mortar, and having been beat up sometime, water may be added to form them into a paste; this, after being well ground in the mortar, is fit for use." Teeth made from this body were first baked, then colored, then coated as thickly as possible on the front and as thinly as possible on the backs with a mixture of one part silex and one and a half parts potash, carefully beat up with water into a paste the consistency of cream. After this had dried they were again placed in the oven and subjected to a fierce heat for about two or three hours, when "the potash and silex will be found to have melted into a good glaze."

This description, to those who are old enough, will recall the painted teeth of our old friend Samuel Stockton and his compeers; teeth that had to be held to the grindstone in a certain way to prevent the enamel surface clipping off; if in an unguarded moment this was neglected, the glaze was apt to chip, at times the entire face of the tooth would scale off, occasionally burying itself into the finger end and calling forth sundry unsaintly ejaculations.

So far as I now recall, the author quoted is the earliest writer I have met with who speaks approvingly of amalgam, or gives directions for its preparation.* While few acknowledged its use, we have ample evidence that it was used by many; and that at an early date, early in the forties, if not before, tin, platinum, gold, etc., were added to the silver used in dental amalgam Of amalgam, on

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American Journal of the Dental Science, vol. ii., p. 155, September, 1841.

page 104, he says, "I have for many years, used an amalgam of silver, prepared in the following manner, and though there are objections against it, still, until something better is laid before the public, it will be found of a highly useful nature. The ingredients necessary for the cement are silver filings, thinnest silver leaf (to be had in small books,) and quicksilver. A drop of quicksilver is poured out from the bottle into a small mortar, or if more convenient, on a cloth; on this is placed a leaf of silver from the book, which, being worked into the quicksilver, becomes speedily amalgamated with it, another leaf is then added, and so on until the amalgam is a thick paste; if there be too little quicksilver in this amalgam, the want will be made perceptible by its non-adhesion, and, on being worked between the fingers, by its crumbling. If, on the contrary, it possesses too much mercury, it will be too soft, and the mercury may easily be squeezed out."

"When the amalgam is brought to a proper consistency, having just sufficient mercury to enable it to be used as a paste, a small quantity of silver filings should be mixed with it; these absorb a portion of the quicksilver, and hence there is sufficient mercury left to keep the silver in a soft state: thus, after the fillings are introduced, the amalgam gradually hardens. Here, then, we are in possession of a cement which may be used in a soft cold state; yet, on being placed in the tooth, speeeily hardens in the cavity."

In "The Parent's Dental Guide; a Treatise on the Diseases of the Teeth and Gums, from Infancy to Old Age," etc., by William Imrie, Surgeon-Dentist, London, 1832 (No. 1583, Crowley's "Dental Bibliography,") I find on page 105 the following in relation to gold caps:

"When the back teeth have become shortened and do not touch their opponents in the opposite jaw, one or more of them on each side of either jaw, as may be found, most suitable and convenient, should be covered with *gold caps.*"

"Indentations should be formed on the grinding surface of the caps to correspond with those of the teeth; and for this purpose they require to be raised on a brass model of the grinders, a process well known to dentists of ability and skill."

"When only a few molar teeth remain in the mouth, although they may be extensively decayed, it is essential to preserve them, for purposes of mastication, and also to prevent the front ones falling a sacrifice to undue pressure. For this purpose the decayed molars should be plugged and afterwards restored to their original dimensions by means of gold caps. This is an effectual way, and may be recommended to persons who have an antipathy to artificial teeth." In illustration he recites a case where "the whole of the double teeth on each side of the lower jaw" were covered with gold caps to relieve the upper front teeth of undue pressure and wear, caused by a wearing down of the grinding surfaces of the molars. This case, so far as the cause, the described condition, treatment and result is concerned, reads precisely as do many such case, related in the dental journals of the last few years.

William Imrie, in a foot-note, quotes from Patterson Clark. I find the words quoted in "A New System of Treating the Human Teeth," by J. Patterson Clark, M. A., Dentist." My copy is of the second edition, London, 1830, (No. 1574, Crowley's "Dental Bibliography.") The first edition was published in 1829. Mr. Clark, from page 162 to the end of the volume, page 199, gives many cases which resemble very closely the cap-and-bridge-work of the present day. This portion of his book deserves a careful study by those interested in the history of this department of prosthetic dentistry; indeed, as the book may be inaccessible to many, a reprint of these pages might be of much interest. We have no hesitation in saying, after perusing them, that if the dental engine, with its revolving tools and grindstones, and the various cements now in general use, had been known and in as general use when

J. Patterson Clark wrote, the bridge-work of his time would, in all probability, have been as satisfactory as is that of to-day. The want of these modern helps un-undoubtedly caused it to become, for the time being, an art.

Throughout the book there is much a thoughtful dentist will read with keen interest if not with profit. Defining his position in the profession, Mr. Clark says (page 164,) "In a metropolis like this, where the division of labor, while it cannot injure the individual, is attended with advantage to the public, the art of the dentist admits of several subdivisions. Presuming on this, the author has long restricted himself to one department, viz.: Preserving the natural teeth, and with a degree of success fully commensurate with his expectations. These operations consist in scaling, that is, in freeing the teeth from extraneous matter, and brushing spongy gums into a healthy state; in examining from time to time, teeth that from their shape and situation, are liable to decay, and at the proper time cutting out the commencement of caries, and thereby preventing its farther progress by the introduction of gold stoppings, by means of which a smooth, even surface, incapable of retaining moisture long enough to rot in, is obtained, instead of the indentations where the caries commenced; in curing toothache and tender teeth; . . . relieving children from toothache, to prevent the premature extraction of shedding teeth; and after the teeth have been lost through accident, heedless extraction, or old age, in pointing out the most appropriate mode of supplying their place by artificial means, together with the person most likely to do it well."

Mr. Clark lays particular stress upon the importance of preserving in effective usefulness the back teeth, and pointedly calls attention to the resulting ill effects not only of their loss, but also of their lost effectiveness when from caries or wear, they become so shortened as to permit the anterior teeth to occlude too forcibly. In all such cases he recommends that the shortened teeth be covered with gold caps fitting the teeth, "as gloves fit the hands," building them up by soldering upon the masticating surfaces layer after layer of gold plate, or where much addition is required he prefers to rivet a block of ivory to the gold cap, carving it to represent the missing portion of the tooth. He insists that these caps, whether of gold or ivory, shall not be left smooth and flat on the mastication surfaces, but that they be carved to represent the hills and hollows of a natural tooth, and so conform to the occluding teeth that when the mouth is shut they "lock into each other as they formerly did into the surfaces of the natural teeth." Intervening spaces between capped teeth he recommends to be filled with proper carved blocks of ivory riveted to gold plate fitted to the gums between the teeth and made continuous with the gold caps. He recommends that those portions of the caps visible from the front be cut away, and remarks of one successful case, "no trace of gold or artificial teeth could be observed on a casual glance at the lady's mouth." He gives in detail a number of cases successfully treated by dentures that must have closely resembled the removable bridges of the present day, and claims for the method suggested that not only are the anterior teeth relieved from undue pressure, so that teeth loosened from that cause have regained their former firmness, but, as the pressure of mastication is borne by the capped teeth, the gums being thus relieved, the dentures are worn with much more comfort and satisfaction.

The first case Mr. Clark cites he gives as the date when treatment was commenced "about the middle of the year 1828," and in a later work published in London, 1836, ("Teeth and Dentism,") most of his remarks upon this subject are repeated.

It may be well to state that these methods are not given by Mr. Clark as originating with himself. From the language used I infer that they were methods of which he approved, well known to the dental art. While bridges supported in various ways by pins, dowels, or collars are known to be very old, and are illustrated in works I have of an earlier date ("L'Art du Dentists," par L. Laforgue, Paris, 1802; "Traite complet de l'Art du Dentiste," par F. Maury, Paris, 1828, and others,) these are the only references to the early use of gold caps for protecting carious teeth and supporting dentures I have so far met with, probably a more careful and extended search might bring others to light. Jobson ("A Treatise on the Anatomy and Physiology of the Teeth," by David Wemyss Jobson, M. R. C. S. E., reprint, Baltimore, 1844) refers to their use in connection with plates and obturators. pages 112 and 118, paragraphs 121 and 122.—*International Dental Journal.*

ARTICLE III.

ANÆSTHESIA VS. ASPHYXIA.

BY S. A. AYKROYD, D. D. S., L. D. S., KINGSTON, ONT.

Read before the Eastern Ontario Dental Association.

Having seen the question, "What is the difference between Anæsthesia and Asphyxia?" in the *Dominion Dentel Journal*, I became interested and took to discussing it with my co-laborer, the editor of the "Question Drawer," who suggested that I prepare a paper for this meeting on the subject.

If you are sorely afflicted by what I say, blame not me but the instigator of the deed. Jokes aside, gentlemen, I have been reading some and have gleaned a little from off the field of knowledge *ie* the question, and with the hope that I may be able to present you with some food for thought, or, at least, afford a basis for discussion. I undertake this task. He who deals with life should know the laws that govern it. But what are laws and what is life? may be asked.

Laws are relations between cause and effect. The same cause will always produce the same effect, if that on which you operate is the same. If this were not so, science would be impossible. Laws are eternal and fixed principles, to be in harmony with which is life, the opposite is death. It remains for man, then, to discover the laws of life and obey them.

Life is a phenomenon which as yet has not been satisfactorily defined. I asked the professor of biology in Queen's University, What is life? After several days he replied, "I can't answer your question." Life has been expressed by Savory as "A state of dynamical equilibrium." Life, however, does not stand alone; it is but a special manifestation of transformed force. Anæsthesia has been variously defined. A definite understanding of what is meant by it is a matter of no small importance to those whose mission it is to relieve pain and save life.

Webster says, "An anæsthetic is that which produces insensibility." Our own Dr. Teskey says, "Anæsthesia is deprivation of the sense of feeling from any cause." Surely such definitions cannot be scientific, for if they are then a club, a rope or a cannon ball would be an anæsthetic, and death itself, anæsthesia. Dr. Thomas, of Philadelphia, says, "Anæsthesia is an unconscious condition produced by the inhalation of various drugs, the forces of life being maintained in the meantime." This is a more comprehensive definition, but still we are not satisfied. Dr. Hayes, in the *Dental and Surgical Microcosm*, from which I take the liberty to quote freely, says, "Æsthesia is a condition of sensibility, but in order to realize sensation the force and functions of life must be continued."

Anæsthesia is the opposite of æsthesia, and is a condition of insensibility, and consequently in this condition there must also be in continuance the force and functions of life. Therefore the correct definition, according to Dr. Hayes, is, "Anæsthesia is a physical condition in which the force and functions of life are in continuance under modifications whereby absensation is produced." This, it seems to me, comes nearer to a scientific definition than any other I have seen. The force of life is free oxygen, or rather, according to recent discoveries in science, electricity is the great force of life, and that oxygen is the carrier of this electricity.

Dr. W. B. Richardson, an English physiologist, has conducted experiments showing that pure oxygen becomes devitalized by repeated inhalations that in breathing the oxygen had undergone some change unknown to the chemist, and that if the oxygen be electrically charged it is revitalized and will again support life.

The chief functions of life we are interested in during anæsthesia are circulation and respiration. To properly understand the science of anæsthesia, we must recognize the double circulation in every animal, the one dependent upon the other. Arterial and venous circulation is as dependent upon neural circulation in the nervous system as life is dependent upon the functions of life. The brain is the heart of the nervous system, and it might be designated the animal electric storage battery.

From the basic element *free oxygen animo electricity* is generated by the pneumogastric glands of the lungs and the cerebral glands of the lungs and the cerebral glands of the brain, and stored in this storage battery to be sent out through the motor nerves as a force to move the organs of the body. This circulation through the nervous system brings back to the brain the greater portion of the electricity, through the sensory nerves, and thus information and impressions are received from the material world by the mind or spirit of man.

Interrupt or arrest this circulation in the nervous system, and you suspend sensation and the force and functions of life, and then you have the first stage of death. From what has been said it is obvious that a true anæsthetic must contain sufficient free-oxygen to fill this storage battery with animo-electricity, or nerve-vital fluid, that the functions of life may not be interfered with. In administering an anæsthetic, death can only be caused by either asphyxia or by shock. Shock is produced by the mind or by the intended anæsthetic agent, or by both acting simultaneously.

What is asphyxia, and how is it produced? Blood which contains a normal proportion of oxygen excites the respiratory centre, and consequently the respiratory muscular movements are normal. A deficiency of oxygen gives a condition of muscular movements called dyspnœa (difficult breathing). When respiration is stopped by interference with the passage of air to the lungs by supplying air devoid of oxygen, a condition ensues which passes rapidly from the state of dyspnœa to what is termed asphyxia, or suffocation, which quickly ends in death.

The ways by which asphyxia may be produced are numerous; for example, by prevention of the due entry of oxygen into the blood either by obstruction of the respiratory passages or by the introduction of gas devoid of oxygen, or of a gas containing oxygen which is not *free*, and, consequently, a due interchange in the blood cannot take place (a gain of oxygen and a loss of carbonic acid).

The symptoms of asphyxia are: violent action of the respiratory muscles and more or less of all the muscles of the body, lividity of the skin and all other muscular parts; the veins become distended and the tissues seemed gorged with blood, convulsions and insensibility, which is quickly followed by death. The conditions which accompany these symptoms are: (1) More or less interference with the passage of the blood through the pulmonary blood-vessels; (2) Accumulation of the blood in the right side of the heart and in the systemic veins; (3) Circulation of impure blood in all parts of the body.

The cause of these conditions and the manner in which they act so as to be incompatible with life may be briefly considered: (1) By the violent and convulsive action of the expiratory muscles, pressure is directly made on the lungs, and the circulation through them is proportionately interfered with. This is the direct cause of the accumulation of blood in the right side of the heart. (2) The vaso-motor centres, stimulated by blood deficient in oxygen, cause contraction of all the small arteries, with increase of arterial tension, and as an immediate consequence the filling of the systemic veins. The increased arterial tension is followed by inhibition of the action of the heart, which, contracting less frequently and gradually enfeebled also by deficient supply of oxygen, becomes over distended by blood which it cannot expel. At this stage the left as well as the right cavities are distended with blood. The ill effects of these conditions are paralysis of the muscles of the heart by over-stretching, venous congestion and consequent interference with the function of the higher nerve-centres, especially the medulla oblongata. (3) The passage of non-aerated blood through the lungs and its distribution over the body are events incompatible with life for more than a few minutes. The rapidity with which death ensues in asphyxia is due to the effect of non-oxygenated blood on the medulla oblongata, and through the coronary arteries on the muscular substance of the heart.

Experiments have been performed on the lower animals, and it has been found in the case of the dog, during simple asphyxia, that is by simple privation of air by plugging the trachea, that the average duration of the respiratory movements was four minutes five seconds. The average duration of the heart's action was seven minutes eleven seconds, recovery not taking place after the heart ceased. Thus we see that asphyxia is a physical condition radically differing from that of anæsthesia.

In anæsthesia the force and functions of life are in continuance under modification, whereby absensation is produced by medico-chemical agents, narcotizing the muscular tissues and the nerve filaments, thereby interrupting the neural current in the sensory nerves. In asphyxia the force and functions of life are suspended or abrogated whereby absensation is produced by the deoxidation of the blood. thus producing insensibility by preventing the generation of nervo-vital fluid and its circulation in the sensory nerves. The anæsthetic agent must have sufficient *free oxygen* to properly support combustion and sustain life. An asphyxiant must be deprived of free oxygen or must not have sufficient to properly support combustion and sustain life. Oxygen chemically combined with any other material element will neither support combustion nor sustain lfe.

Therefore, nitrous oxide gas (N_2 O) will no more sustain life than carbonic acid gas, or nitrogen gas, or olyphiant gas, or any other inert gas. While it is maintained that N_2 O will support combustion by applying a lighted taper or a piece of heated charcoal, the fact is lost sight of that there is not heat enough in the human body to decompose the two chemical elements and set the oxygen free, and that it is the free oxygen and not the nitrous oxide gas that supports combustion.

Robert Marston, Lancaster, England, writing in the *Items of Interest*, in substance says: "To suppose that nitrous oxide is an anæsthetic is to assume that it either plays the part of a toxic compound radicle, in the vito-chemical equations of the body, or else that its disassociated elements separately participate in the play of affinities, but, if nitrous oxide disported itself as a toxic compound radicle, its narcotic power would assert itself, as that of chloroform, ether and other narcotics, though atmospheric air were freely admitted with it to the lungs, a result which practitioners know is impossible of attainment. On the other hand, if nitrous oxide became chemically split up during the corpuscular changes, arterialization of the blood would in that case inevitably ensue with abnormal energy, owing to the greater proportion of oxygen which nitrous oxide N_2 O contains, as compared with the proportions of oxygen and nitrogen found in common air N_4 xO. That this arterialization does not take place is sufficiently proved by the characteristic lividity of gas patients and other indications."

"Physiological effects are incompatible with the supposition that nitrous oxide is an anæsthetic; appearances distinguish it as a negative asphyxiant.

"When nitrous oxide comes to be regarded as a negative asphyxiant it will then be understood why it has the reputation of being the safest of all, so-called, anæsthetics. The prevailing opinion that it is a narcotic, whose peculiar action distinguishes it so distinctly from the dangerous compounds of its class, appears irrational when the diffusibility and cumulative tendency of all respiratory narcotics is relatively considered. During that kind of anæsthesia which results from oxygen starvation, all the co-existing conditions are relatively connected; their deflection is uniform, and represents a string of alternated causes and effects, whose tension to rebound with reparative co-operation so soon as the swerving power of the asphyxiant is removed, constitutes that ignored cause which distinguishes the safeness of nitrous oxide from the ungovernable capriciousness of every other tabulated 'anæsthetic.'

"The absence of oxygen causes the accumulation of natural products and corbonic acid, which have a toxic action on the nerves, obtunding their sensibility: When chloroform, ether or other anæsthetics are used, the result is different; toxic asphyxiants have a stronger affinity for the complex molecules of nervous tissues than for the crude and comparatively elementary substance of the circulation. Thus they directly attack the fundamental principles which, subservient to the first cause, create and control all the phenoment of life, sometimes paralyzing the vital endowments, even while the respiratory changes are, to all appearances, ordinarily taking place."

Although deaths are rare from nitrous oxide gas, being only one in a million, let us remember, to obtain anything like complete insensibility with it, we must push the patient dangerously near the death-line, and that no anæsthetic agent should be administered without the admission of plenty of free oxygen or atmospheric air.

The time is coming when we shall be able to understand the physics of the breath of life, or of the oxygen of respiration, which is also the oxygen of combustion; how the inrush of oxygen, by way of capillary gates of the lungs and the corpuscles of the blood, to the tissue-cells of all parts of the system, carries a ceaseless volume of vital energy; how this animating and life-maintaining energy is nothing less than electricity of absolute dynamic strength and sureness—every breath, according to its size a definite quantity of vitalizing, heating and sustaining energy, and how the flow and charge of this energy, in all parts of the system, will maintain functions and operate organs which it has, in fact, created.—*Dominion Dental Journal.*

ARTICLE IV.

HIGHER DENTAL ETHICS.

BY J. H. SMYSER, D. D. S.

It is not my purpose in this brief paper to discuss ethical studies at any great length. It is not necessary to do so for the purpose in hand.

The doctrine of ethics is not an exact science, not even a science for all, for it lacks some of the elements that enter into the definition of the word science.

The ground work upon which the superstructure of science is built is a series of indisputable facts capable of demonstration and easy classification.

The ground work of ethics is a series of propositions almost universally accepted as truth, but which are nevertheless subjected to much specious modifications, no tyro would ever attempt this upon a fact of science.

A sufficient number of propositions or principles of ethics are universally accepted by enlightened society to form a firm basis for the doctrine of ethics, and the highest and noblest branch of speculative phisosophy.

Few, indeed, are the men who would attempt to controvert any part or parcel of the doctrine contained in the simple injunction, "Do unto others as you would have others do unto you." This, of course, is only one of the many index fingers which points with an unerring directness toward the highway along which move the highest type of the upright man.

But I apprehend that the difficulty does lie in the non-acceptance by professional men of the principles of ethics. Their absolute truth finds lodgment in every cultured mind. Their acceptance is practically universal.

There is no room for the ubiquitous liberal to stand on beyond and outside the ethical platform, as to whether he shall believe or not.

The field of controversy lies somewhere else, and it is certainly not hard to find; its crags and peaks loom up somewhere in the hazy distance at many, if not all, of our meetings. There is room for suspicion that the field of doubt sometimes, through a mental upheaval, is thrust up to and into our private offices. A glimpse of the landscape where there is no law but self, and no criterion of success but money getting, is apt to be seductive even if it be illusory.

It is in the practical application of ethical principles to our every-day practice where the "Faith that is in us" is put to the test. This fact is well illustrated, I think, by a discussion between a French professor and a group of his young countrymen. The professor was an instructor on ethics. He had previously attempted to ground his disciples thoroughly in the doctrine contained in the injunction, "Love thy neighbor as thyself." It was review day and he was questioning his class closely in order to test their ability in applying its teachings to practical affairs of life.

The answers of the students came promptly; they showed a high degree of advancement in ethical training; there was no halting, no faltering, no misjudgment. Finally came the question, "How should the French, as a nation, feel toward the Germans, as a nation?" Here was a poser. The wheels of progress were blocked; silence reigned everywhere. It was a case where inclination and plain duty clashed.

Certain images of Alsace and Lorraine began to float before the young Frenchmen, and here began a series of specious modifications and exceptions supposed to free the French from the operations of a plain law, and this picture is a type of the difficulties that beset men everywhere, and in all walks of life. It is the unswerving application of plain rules to the practical affairs of life whatever our own inclinations are, that give rise to doubts and difficulties.

Now, we who are not concerned in the affairs of these two great peoples, who have no inborn feeling in the matter, would have no difficulty in applying the rule in this case; for it is a law that ought to be immutable and binding everywhere and at all times.

Many things contributed to the young men's wavering attitude. Probably the professor's own example, being a historic Frenchman, in his daily life may have been a silent commentator on the doctrine he was enforcing so well in his lecture. It is supposable that his supporting anti-German sentiment, though his political and other association may have had its influence on the minds of his followers. Who knows?

In order to avoid the many undesirable infractions upon the code of ethics we must endeavor to improve our institutions of learning; to do this, more time and attention should be devoted and greater care observed in making good honest impressions upon the student, affecting the character of the professional life he is about to lead.

In passing through many of the colleges of our cities and observing their way of doing things, the relation between instructor, demonstrator and student, and the manner of treating their patients, reminds one of a typical *dental parlor* and the more time devoted to the investigation of those infirmaries the more striking becomes this comparison.

It is the belief of the writer that the old adage, "As the twig is bent so the tree is inclined," can in no place be better applied than right here.

It is not true that in art, business and the professions students follow the general style of their instructors, or the institutions from which they secured their education. We believe that the greater fault lies in the fact that most of our so-called colleges are conducted in too great a measure as money-making mediums, and since, as a rule the men on the higher rounds of the ladder in the profession are the ones usually connected with those institutions, either as directors or faculty, are responsible for the way in which that institution is conducted.

To this fact is due the reason that so little is being done to improve the condition and raise the standard of education, which is the only way by which we can reach the fulfillment of a desirable code of ethics.

To the same fact may be added the inability to obtain any satisfactory legislation in the way of giving authority to corporations to grant license to individuals to practise dentistry. Hence we have weak colleges scattered all over the land, offering any and all kinds of inducements to students to go there and study dentistry, regardless of ability character or previous conditions of servitude. It is not even necessary to know or understand the language used in the institution. The one thing needful is a certain amount of time and money and a specified amount of operative and mechanical work (representing so much cash). Having filled these few most important requirements, they are furnished with license to practise dentistry. What can we expect from such a condition of things, and who is to blame?

I hope each one here to-night will become interested enough in this subject to formulate some answer for himself. A few of the colleges are, without a doubt attempting to improve these conditions, endeavoring to impress upon the students the fact that they have some honesty of purpose, and aside from giving them the best possible instructions upon the theory and practice of dentistry are also inculcating principles of a higher character, satisfying the requirements of the honorable practitioner.

Advertising in its various forms seems to be the leading evil, to which men resort to lower the standing of the profession. It is not necessary to enumerate the different forms used by each individual, since unlike conditions and circumstances demanded in a style peculiar and suitable in each case to make up the deficiency. All alike obnoxious and dishonorable, the main object being to deceive. Whether through the public press, programmes, or gay streamers hung up in public places, they all have the same purpose in view, and the same unprofessional effect in the end. The higher the standing of individuals the greater the harm done.

Take as an example a student at college, writing out the time for appointment with a patron on a card, on the back of which is printed the statement that "We charge for material only," and after the patient returns and has a tooth filled with amalgam, a charge of $1.50 or $2 is made. What a volume of ethical culture goes with such a transaction. What a feeling of honesty there is in it; and then that same student goes down town and drops into one of the hotels, and there on a post he sees the names of the faculty on a silk ribbon, telling where they may be found during certain hours. This, of course, is to convey to the unwary stranger the fact that his name, being on the nice yellow ribbon, would be a more desirable place to receive professional services, than across the way, where the portraits of those many nice looking men with stylishly trimmed whiskers, are placed on a bill board.

No credit or honor in the way of ethical training can ever be claimed by an institution that turns out young men under such conditions, though a few may reach the highest pedestal of fame, and from the time they leave the institution their march is upward and onward, elevating whenever they can, the soiled mantle of our code, by honesty and integrity. Many are fond of taking a different course, resorting to the various unprofessional ways to conduct their business, and in many cases they are only following out the principles taught them in their early education. Other influences might have produced different results.

What I have written upon this subject may exclude a few of the better colleges, but the fact remains that there are many and most of the colleges whose teaching and influence have a lowering instead of an elevating effect upon those brought in contact with them.

I am a firm believer in the saying "That the sins of omission is as great as the sins of commission." We should reach the highest perfection in our better colleges and wipe out of existence those which are conducted only for pecuniary considerations and not for dental education, and when this is done our attention should be called to those disreputable places called "dental parlors," so numerous in all our large cities, some of them being conducted by men who are absolutely destitute of any knowledge upon the subject, have no thought of the high character of their work, the importance of their best skill, but are simply conducted as a business enterprize. Men whose influences are needed to remove these evils, never stoop from their exalted positions to consider the harm done to the profession they are apparently so much endeavoring to elevate. Months of education is required to offset the evil influence of a day, upon those naturally weak in the doctrine of ethics, and much individual, honest effort is necessary to remove the distrust of the public mind.

If it were not a fact that the eyes of the public were kept in darkness concerning the happenings of those places owing to the bountiful revenue contributed to the daily press they could not possibly exist.

Think of the health department interfering with the prayers of Dr. Dowie on ethical exceptions, and allowing such dental parlors to flourish unmolested. Here is an opportunity for some one to promote our ethics, and at the same time become a benefactor.

Abuses are not alone confined to this lower strata of the profession. A common evil among the "upper crust" is in daily practice in the form of exorbitant fees.

The evil in this respect is greater and more dishonorable than in the case of the dental parlor man, from the fact that the class of men in question are of a different type, whose intelligence, and knowledge of values, tell him that the transaction with his dentist was dishonest and is a means of breeding distrust, in destroying the ethical relation between the public and profession, which is of far more importance than that between men of the same profession.

The result of experiences of the above nature can be seen when individuals take up the daily papers and scan the columes for rates on dentistry, pass from the sublime to the ridiculous as it were, take chances with the fates in preference to submitting to an unjust fee.

I do not believe much in technical ethics; different writers upon this subject, draw the line of demarcation between professions too sharply; as, in the case of the city dentist accusing the country physician of a breach of ethics because he extracted an aching tooth for his neighbor; or, on the other hand, the physician censuring the the dentist for advising a remedy for the cure of sick headache. or wiping a chunk of soot from a patient's eye. This is not what is meant by higher ethics, but finds its application in the rules and regulations of labor unions. We should be far beyond any such petty jealousies, place our aim higher, show to the world that we are public benefactors, be honest with each other in all our dealings and carry out to the letter what is implied by the Golden Rule.—*Dominion Dental Journal*

ARTICLE V.

AMALGAM AND HOW TO MANIPULATE IT.

DR A. C. HEWITT, CHICAGO, ILL.

The cavity should be prepared as conscientiously as for gold filling, sterilized and desiccated. To aid in doing the latter readily the following may be used as dentinal desiccant:

R.—Alcohol (pure)	fl. ʒ v
Chloroform	fl. ʒ iij.
Beta naphthol	grs. v.

M. Apply to flood the cavity thoroughly and evaporate with warm or heated water.

I use the term "desiccated" in the sense of the definition given by Dunglison (Med. Dict., 21st edition), *i. e.*, "draining, drying." Not only should salivary moisture be removed, but that lying in the tubules, the dentinal plasmasomes, and the unctuous film along broken enamel rods. I lay stress on this part of the work, for if moisture lies back of the imposed plastic, especially if the alloy contains copper, there will be oxidation and precipitation of salts to blacken tooth substance and invite influx of oral fluids.

Unless we realize how difficult it is to bar moisture from any place, we will underestimate the need of the care advised. Next, the surfaces to be covered in by the amalgam should be coated well with some resinous solution for two purposes. First, to bar moisture, and second to form a stick base in and on which to grind particles of the alloy. For this purpose the following is what I have used with gratifying success:

R.—Sandarach varnish,	
Damar varnish	aa fl. ℥ j.
Alcohol (absolute)	fl. ℥ j.
Beta naphthol	gr. v.

M. Apply as varnish.

When the liquids have evaporated, leaving the resins as a lining for the cavity, the dentine and enamel should receive another coating, this time of amalgam burnished on to the varnish with a smooth-point amalgam plugger flat-faced or "shot" pointed, till the cavity floor and walls take on a mirror-like surface. By thus burnishing the amalgam on the walls, every tubule and enamel interstice will be filled and brightened over.

The amalgam for this first coating may be well saturated with mercury, but only sufficient of the moist mass left to form a thin coating, all surplus possible being "poked" or burnished out of the cavity. From thence on, amalgam wrung through heavy muslin or chamois only is to be used; one layer after another burnished on the preceding one, each added mass being as dry as can be and cohering to the preceding one. If free mercury is thus brought to the surface of the plug, it should be "poked" or burnished out before another dry mass is added. Keep the growing mass dry. Thus build till the cavity is "rounding full," care having been taken that every undercut, fissure, nook and corner is densely filled, not with free mercury, but with the alloy. When the cavity is more than full, "rounded over" like a bushel of potatoes in a basket, coax the surplus mercury to the highest point by gentle pats or tapping with the plugger, and while thus atop, absorb it (free mercury) with tin foil No. 4, rolled into balls, or what is better, "bricks" of Watt's crystal gold No. 2, freshly annealed in a lamp flame. When the free mercury is thus disposed of the surplus amalgam to be burnished down to a proper level with a hand-shot point, or a steel "Herbst" point in an engine hand piece, rapidly driven, moving the instrument from the center toward and over the enamel borders. Thus the line of free mercury, always tending to cling to enamel border, will be taken up and carried off by the dryer surplus portion of the filling. Before removing the dam, varnish the plug. In mixing the amalgam, the bare pulm of the hand and the bare finger should never be used.

Enough oil and moisture, from a bare palm, can be worked out to saturate an ordinary sized mass for a filling. Dry the cavity; keep it dry. Prepare the amalgam free from oils and water; pack densely; absorb surplus mercury. At a future sitting, polish the filling. If good alloy is used and this care is taken in the manipulating, but few workers will live long enough to see the need of a repair.

Of course, some cavities can only be filled "submarine." Then try gutta-percha till above high-water mark.—*Items of Interest.*

Editorial, Etc.

AMERICAN DENTAL COLLEGES.

We have elsewhere noticed *The Transactions of the American Dental Association*, but we may here perhaps be allowed to consider at greater length the report which was made in Section II., which dealt with Dental Education, Literature and Nomenclature. From this it appears that the National Association of Dental Faculties still continues to exercise an influence for good. Perhaps no more important or hopeful movement has marked the progress of the Profession in recent years, than the voluntary banding together of the best American Schools. Instead of students drifting to other centres where a shorter curriculum was demanded, it has been found that this class of the community was wise in its generation, and really helped and supported the new movement. There was a decrease in the number of graduates in 1893 and 1894 due to the operation of the three years course, but a similar condition of things is noticed with us whenever the curriculum is extended, and it is a matter which generally rights itself before long. At the present time there are thirty-two teaching Institutions which belong to the National Association; those not on the roll are chiefly the ones recently organized, and even these, with a view of rendering themselves eligible for membership, conduct themselves with that end in view. One of the great drawbacks the Association of Faculties seem subject to is the ease with which new Dental Schools can spring into existence. Each State is able to do as it pleases, and during the last ten years the number of schools has doubled. The opinion is expressed that in the future the increase is likely to become even greater, in consequence of the existence of what is described as a "fad" on the part of medical schools to establish a dental department. Out of the forty-four dental colleges, twenty-seven are "operated" in conjunction with medical departments. The criticism offered upon this easy method of increase (some of the medical schools requiring no additional charter and already having teaching provision in several of the subjects) is to the effect that it may be profitable to the medical school but is not calculated to redound to the credit of the dental profession. We are, however, glad to read the first portion of the following quotation, and at the same time can appreciate the humorous allusion in the latter part: "It is not the desire of the Section to deprecate such a condition, for many of the schools thus connected are among the best of the country; but it should be borne in mind that there are more than two hundred and fifty medical colleges in the United States, and the addition of a vermiform appendix to each of these may fasten upon the dental profession a dangerous disease." We do not altogether agree that a dental department should be compared with that *cul-de sac* of the human economy, the function of which appears doubtful unless it be to serve as an instance of a useless and sometimes dangerous survival.

Another matter alluded to is the necessity which exists for some more or less uniform test as to a student's proficiency in general education before entering upon the professional curriculum. At present every school judges its own candidates, and this leads to "the admission to the ranks of the dental profession to many whose fitness may be questioned with propriety." It is suggested that the degree of Bachelor of Arts, or its equivalent, should be demanded, but then the stipulation is necessary "provided that it is obtained from a reputable university." Another important thing recommended is the extension of the school year to nine months, and the increase of curriculum to four years. Owing to vacation, and other interruptions, it is possible under the existing rules for a man to complete his education without having *actually* devoted more than twelve months to the study of dentistry.

There are many other subjects worthy of consideration in the report before us which we hope to find an opportunity of placing before our readers. The earnest men who are in the fore-front of the battle of professional progress in America will doubtless continue their efforts. Too little is known in other countries (where circumstances are so different) of the difficulties of the struggle, but our Trans-Atlantic brethren may rest assured that they have the sympathy of British practitioners, who (in spite of occasional misunderstandings) welcome good work for the advancement of the profession wherever it may be done. We may perhaps just notice that in the discussion which followed the reading of the report, Dr. Abbott referred to the existence of a "Diploma Mill" in Kansas City, legally chartered, and carrying on business in selling diplomas; Dr. Ottofy was also of the opinion that there might be others which escaped observation. These remarks may be of interest to our correspondent who signs himself "Registered."—*Editorial in British Dental Journal.*

QUACKERY DEFINED.—Quackery is medical practice commercialized, and therefore prostituted. It thrives because the victims are in the majority and are easily reached by lying advertisements. "What is the proportion of sensible people in this crowd?" asked a patent medicine man of a physician. "About one in ten," was the answer. "I take the nine and leave the one to you," said the quack. This represents the majority which help to make the quack rich. The nostrums cost almost nothing; but the capital is used in advertising, in making pictures of the idiots and feeble-minded who imagine themselves cured; in placarding fences; in defacing scenery; in publishing manufactured certificates; in ridiculing scientific medicine; in alarming the credulous; in claiming false discoveries; and in vaunting impossible results. But these are the men who make the money. Medicine to them is the nickel-in-the-slot machine. The diagnosis is ready-made to suit every need, and even otherwise sensible people are being educated into quackery and into the belief that every man can be his own doctor and not have a fool for a patient.—Dr. George F. Shrady in *Forum*.

Monthly Summary.

TREATING NAUSEA CAUSED BY TAKING IMPRESSIONS.—(Dr. B. Salzer).—Case 1. A lady patient, 60 years of age for whom I had extracted, with very little trouble, all the remaining upper teeth and roots, except the centrals, preparatory to making an upper set of teeth for her. I tried to take an impression in plaster of paris, but as soon as I got the impression cup into her mouth she became very much excited and inclined to nausea, which lasted about half an hour. I could not attempt it again at this sitting; at the next, I took Stent's impression compound, but even after brushing the roof of the mouth with cocaine I could not take an impression. I gave her new impression cups, together with sufficient Stent's impression compound, and told her to try herself to take an impression at her home. It was almost six months till I saw her again at my office, when she brought me two beautiful impressions, one of the upper and one of the lower. She then took another impression in my presence, and kept the compound in her mouth for almost five minutes. After the plate was made she had almost as much trouble to go through to get accustomed to wear it as she had to take an impression. Case 2. Lady, 60 years of age. Same trouble as case 1, of which I told her, and also gave her impression cups and compound, but after a short time she returned and stated that it was utterly impossible for her to accomplish it. I had in the meantime looked for something that would cure or prevent this very disagreeable nausea, and found that alcohols had been successfully used in some cases. Using pure alcohol diluted in her mouth, or giving her a little pure cognac, made a great improvement, but when I gave her a little rum it acted like magic. I could now take the impression, without the slightest trouble, with Stent's compound of plaster of paris. Before putting the finished Plate into her mouth I gave her a little rum again and had no trouble. Since the above I have only had one case to try the efficiency of the rum, and with it I had the same good results.—*Journal fur Zahnheilkunde.*

FILLING PULPLESS TEETH WITH FISTULOUS OPENING.—In the May number of the *Items of Interest*, Dr. C. N. Johnson, of Chicago, tells how he does this operation. The busy practitioner may not have time to resort to this proceeding, as described by Dr. Johnson. Now let me tell you how to do the operation, and do it quickly.

After getting a direct opening into the pulp chamber, and thoroughly washing out its contents with warm water from a syringe, apply the rubber dam, and dry out the pulp chamber with cotton and hot air, then with Gates-Glidden drills of different sizes, enlarge the canals to the apex; now twist a few shreds of cotton around a Donaldson broach, and saturating in pure carbolic acid and iodoform, use as a piston until the medicament appears at the fistulous opening, and do not cease until it does appear.

Now your tooth is ready to fill; do not wait a day or a week, but go right ahead and fill solidly to the apex. I use shreds of cotton saturated with chlora-percha, and a touch of iodoform, and have yet to see the first case of this kind come back to me for treatment in a practice of fifteen years.—Dr. Angus Cameron in *Dominion Dental Journal*.

GOLD AND PORCELAIN CROWNS.—Dr. S. W. Twilley, Baltimore, Md., describes his method of making gold and porcelain crowns similar to the Richmond system, arranged so that the porcelain fronts can be adjusted or replaced at any time. The band, cap and pin are united with solder in the usual manner. The porcelain front is then provided with a heavy backing and attached with soft wax, not bending the pins. The porcelain is then fitted to the cap and attached with hard wax, after which the porcelain is separated from the backing with a thin bladed instrument. Lead points, No. 4½, such as are used for lead pencils made by Henry Cohen, of Philadelphia, are used in the holes caused by the withdrawal of the pins, with the ends left projecting slightly. The parts are then placed in plaster and marble dust, and united with solder in the usual manner. The solder flows around the carbon points, after which the carbons are removed with a drill and the holes slightly countersunk. The crown is then set with oxiphosphate and the ends of the pins riveted.—*Dental Register*.

DECAYED TEETH.—Just what effect on the stomach is produced by the constant swallowing of bacteria and pus from diseased teeth, mingled with decomposing particles of food, we are unable to determine, but it is reasonable to suppose that gastric disturbances are greatly aggravated if not induced by so doing. In every community there are those who are enthusiasts on the subject of pure air and wholesome food, but whose mouths are in such a neglected condition that the air which passes through them is almost as polluted as that of crowded tenement, and every mouthful of food swallowed carries with it into the stomach millions of bacteria. The almost entire futility of sterilizing articles of diet for patients in whose mouths chronic abscesses exist, or whose teeth are covered with tartar mixed with mucus and food in a state of decomposition, need hardly be mentioned.—*Items of Interest.*

NEW LOCAL ANÆSTHETIC.—Dr. K. L. Schleich, of Austria, produces perfect immunity from pain by subcutaneous injections of a sugar or salt solution, or of merely cold distilled water. He adds: "The patient may remain perfectly unconscious during the amputation of hand or foot, without any of the dangers accompanying general narcosis." The phenomena is explained as follows; Local insensibility to pain is induced in the case of cocaine by purely mechanical changes, while cold water and solutions of sugar and salt act mechanically through *high paessure* and *low temperature.* Under these influences the blood and lymph are driven from the places operated upon to where the pressure is less. The tissues are thus deprived of their supply of blood, and temporary paralysis of the nerves results.—*Medical Age.*

MEDICINE AND DENTISTRY.—Dentistry having been respected as a specialty of medicine by all professions and the public by its thorough courses of college education, therefore we must assume that right, rather than assert it.

We can best accomplish that result by keeping strictly within our specialty and never reaching beyond, and so demand and expect the same of other specialties and practice.

Patients having systemic causes for local dental maladies should receive treatment from physicians, and then special treatment from dentists. Dentists too often prescribe systemic medicine and drugs which come under medical practice, for the administration or injection of any medicine which produces systemic effect should be attended to by the patient's physician, and that administration and operation performed in the physician's office if possible, thereby recognizing the physician's ability and decreasing the dentist's responsibility. No physician will administer anæsthetics and perform operations without an assistant, and they often criticise dentists who will do this, which without doubt is good criticism and which cannot receive too much thought from a dental standpoint.

Asserting their code of ethics and respecting it will be of profit to dentists as well as if applied to dental fraternity, that is, when patients come from other dentists with grievances, the patients having become dissatisfied, the dentist should ask them to release themselves from the former dentist, and find no fault if possible.

Often physicians send patients to dentists for examination; inquiries should then be made as to their diagnosis, and should you not agree with the physician, it is not wise to tell the patient until you have consulted him and thoroughly showed respect for his profession, which he will appreciate; and should he be correct, inform him also of progress in the case, and forget not that he will be interested.

A dentist should not deal in or sell any preparation or material if he does not intend carrying on business in preference to his profession. Should he desire any specialty, he may ask and see that the business man best suited for such work is engaged, and that specialist will respect and realize that the dentists are alive to their interests.

The theory and practice of dentistry, so little taught to physicians and druggists, should be dwelt upon at every opportunity. The public will respect the profession of dentistry in proportion as the professions of medicine, pharmacy, dentistry and the business men show respect to each other in keeping strictly within their vocation, thereby advancing the interests of each other. The greatest influence we will ever receive is that from our own professional associations and from which we will achieve the greatest benefit to success.—S. J. Renz in *Western Dental Journal*.

HYGIENE OF THE EYES.—Dr. L. W. Fox, professor of ophthalmology, Medico-Chirurgical College, Philadelphia formulates the following rules for the care of the eyes:

1. Avoid sudden changes from dark to brilliant light.
2. Avoid the use of stimulants and drugs which affec the nervous system.
3. Avoid reading when lying down, or when mentally or physically exhausted.
4. When the eyes feel tired, rest them by looking at objects at a long distance.
5. Pay special attention to the hygiene of the body, for that which tends to promote the general health acts beneficially upon the eye.
6. Up to forty years of age, bathe the eyes twice daily in cold water.
7. After fifty, bathe the eyes morning and evening with water so hot that you wonder how you stand it; follow this with cold water, that will make them glow with warmth.
8. Old persons should avoid reading much by artificial light, be guarded as to diet, and avoid sitting up late at night.
9. Do not depend on your own judgment in selecting spectacles.
10. Do not give up in despair when you are informed that a cataract is developing; remember that in these days of advancing surgery it can be removed with little danger to the vision. The same author contributes an article of some length to the November *Dietetic and Hygienic Gazette.—Western Dental Journal*

INFECTED ROOT CANALS.—Dr. De Marion, of Paris, France, has treated a large number of infected root-canals by filling them with cotton saturated with a 33 per cent. solution of formal (essentially the same as formalin), hermetically sealed in, and in no instance as yet has there been any subseqent infammatory action.—*Items of Interest.*

DISINFECTANTS.—The diluting of disinfectants with alcohol, glycerine and oil makes them ineffectual. Dr. Lenti, of the Hygienic Institute of Naples, has found that corrosive sublimate dissolved in alcohol has proved useless even in 1 in 250 solution on spores which were placed in solution for 48 hours, their virulence was only weakened. By adding 10 per cent. water to the alcohol the germs were destroyed in a 1-1000 solution. A 2 per cent. solution of corrosive sublimate in pure glycerine was useless even after subjecting the spore to it for four days. By adding 40 per cent. water they were destroyed in a solution of 2-1000 in 24 hours. A 10 per cent. solution of carbolic acid in alcohol is useless, and remains so even up to 50 per cent. By adding 80 per cent. water the germs were destroyed in 48 hours. A 10 per cent. solution of carbolic acid in glycerine proved ineffectual even after 72 hours; 10 per cent. water added did not change it, but after 80 per cent. water was added it destroyed the germs in 48 hours. A 20 per cent. solution of carbolic acid in oil, and a 10 per cent. solution of lysol in oil, are both useless.—*Zahntechniche Rejorm.*

HOW TO ARREST A BOIL, CARBUNCLE, OR MALIGNANT PUSTULE.—Dr. Baker writes to the *Medical Summary* that he has used the following procedure for several years with unvarying success: Take a large hypodermic syringe, holding, say, half an ounce, fitted with a small needle. Fill it with a 1 to 500 solution of mercuric chlorid, insert the needle in one of the peripheral openings, in case it is a carbuncle, and wash out the little cavity. Then direct the needle toward and in the surrounding induration, and force a little of the solution in it. Treat each opening and its corresponding peripheral circumference in the same manner, carefully washing out the necrosed connective and other tissues that have become searated. Repeat this daily with the solution, gradually reduced to one-half the original strength, till all induration has disappeared and granulations have begun to appear. If the irst injection be thoroughly performed, the spread of the carbuncle will be arrested at once, and there will be no more pain. Washing out the little cavities is painless, but the injection in the indurated tissues is not free from pain. The same treatment is applicable to the little feruncles that invade the *meatus auditorius externus* and the inner surface of the *ale nasi.—Med. and Surg. Reporter.*

I have observed more failures (recurrences) at this point (cusp angles) than at any other point.

This is caused largely by the former practice of leaving these angles intact, with the view of giving some support to the filling, which I believe to be a fallacy. When but little dentine is left it is entirely inadequate to sustain the easily cleaved enamel under the wear and tear of mastication.

Anchorage gives better access to the cavity margins and all parts of the cavity likewise, than the older forms.

Outward bevel all around the cavity margin (not too great) and the cavity is ready for the filling.

We go to our meetings, and we talk and talk about how to prepare cavities and introduce fillings to make them last. Now what more is there to it than the putting of all the material you can in a good, clean, properly prepared hole ?

However simple the general principles may seem, experience teaches there is a wide difference as to how the hole is cleaned and the material is put in—whether the results are to be permanent or temporary; comfortable or painful—whether put in by the master or by the apprentice, the accomplished operator or the bungler.

The cervical margin! Place your filling material evenly and firmly on all margins and surfaces alike, maintain as uniform density as possible through the whole mass of the filling.

Restore the lost form of the tooth caused by decay and excavation. The cervical margin should now be able to take care of itself.

Amalgam is to take rank, on its merits, as a permanent filling material, both for rich and poor; for resisting decay; for easier form-building; and for its adaptability to the cervical margin.—*Review.*

The Treatment of Epithelioma.—This is the patient upon whom we operated some time ago for an epithelioma on the right side of the chin, extending almost to the vermillion border of the lower lip. Under a general anæsthetic, I cut away all the rank tissue, as deep as the periosteum of the lower jaw, but as it was uncertain whether the bone was involved in the malignant process or not, I did not remove the inferior maxilla. The bone was somewhat roughened, but there were no signs of granulation tissue, such as we see in malignant bone disease. I scraped the wound thoroughly and then applied Marsden's paste, which has the faculty of destroying only diseased tissue; it does not destroy healthy tissue. This paste destroyed the superficial layer of the bone, proving that in spite of its healthy appearance, it was already involved by the disease to some extent.

In St. Louis, on the third of this month, I delivered an address on surgery, which consisted of a summary of those points in surgical work which attracted my attention most during the past year. One of the points brought up for discussion was the treatment of superficial epithelioma. On this subject I have undergone a decided change of mind during the past five or six years. If I had a superficial epithelioma develop anywhere on my body where I could use Marsden's paste, I would prefer that method of treatment to the knife. In cases where the disease has existed for so long a period that the paste alone cannot be relied upon, I would prefer to have the malignant process first cut or scraped away, and then have the paste applied. In this way we get more satisfactory results than by any other treatment I know of.

The formula for Marsden's paste, which I have given you a number of times, is as follows:—

Acid arsenious - -	2 drachms.
Pulv. gum arabic - -	1 drachm.
Cocaine muriate - -	18 grains.

When you are ready to use this it should be made into a paste by adding water. The paste should be of the consistency of rich cream and should be applied to the wound on a small piece of cloth, which is left on from eighteen to thirty-six hours. This can be repeated as often as is necessary. The above is the formula for the stronger paste. In the weaker preparation we use only one drachm of arsenious acid and twelve grains of cocaine. Marsden's original formula consisted only of equal parts of arsenious acid and gum arabic. The cocaine has been added to counteract the pain; it has never, to my knowledge, given rise to constitutional symptoms.

It is a fact that arsenious acid, in certain combinations with gum arabic, forms a most potent remedy in the treatment of malignant disease. In many cases coming under my own observation its use has been followed by most satisfactory results, effecting a complete cure and no recurrence taking place. It is difficult to say whether the action of the remedy is directly mechanical and partially phagocytic, which practically means that one bug eats up another bug. It is possible that by these applications a suppurative process is set up, the germs of which may eat up the rank tissue of the malignant disease, or kill the specific germ which causes such disease. Epithelioma is probably produced by some germ, although it has not yet been discovered. Following the law of analogy, it is a case of the survival of the fittest, which runs through all the universe. The theory of phagocytosis has been actually proven in connection with the white blood corpuscles, which have the power to destroy certain bacilli.

The same theory applies in the treatment of sarcoma with the toxines of erysipelas. I have seen several cases of undoubted sarcoma which were cured after accidental inoculation with the erysipelas cocci. In one of these cases, a man with a large sarcoma of the abdomen, ten or twelve years have elapsed and there has been no recurrence. In several other cases, five or six years have elapsed.

To show the value of Marsden's paste, the following case is of interest: A boy, about twelve years of age, developed a tumor on the forehead. His physician, who regarded it as an ordinary sebaceous cyst, cut it out. It returned within six or eight weeks. I then saw the boy, and recognizing the growth as a malignant one, I performed a very radical operation, cutting away all the tissues down to the temporal fossa. It recurred within four months. Dr. A. R. Robinson then saw the case with me in consultation and we decided to apply Marsden's paste. We did so and the result was entirely satisfactory. This was many years ago, and up to the present time there has been no recurrence, nor is there likely to be.—*International Journal of Surgery.*

FOR HEMORRHAGE.—Dr. Blaschko, of Berlin, uses a solution of one pint each of gallio acid and ergotini in a mixture of 25 parts each of distilled water and syrup of althæa, of which a teaspoonful is to be taken every few hours. —*Deutsche Medizenal Zeitung.*

METALLURGY—Dr. D. B. McHenry, Grenada, Miss., said before the Mississippi Dental Association, "We believe we should return to the earlier methods in prosthetic dentistry, before the advent of rubber plates, by the abuse of which the profession has been 'abused, vilified, degraded to the lowest depths at the hands of charlatans.'"

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ARTICLE I.

THE SCIENTIFIC SPIRIT AND THE ETHICS OF DENTAL PRACTICE.

BY DR. C. J. ESSIG, PHILADELPHIA.

Read before the Academy of Stomatology, Philadelphia, April 23, 1895.

"The individual," some one has said, "is a puzzle; in the aggregate he becomes a mathematical certainty. You can not foretell what one man will do, but you can say with precision what an average number will be up to." In no calling is this more conspicuously true than in the dental profession; its rapid advancement, its triumphs and scientific spirit very justly entitle it to the admiration and pride of its members. Yet among dentists it is often asserted that there is no *esprit de corps*, and the frequent instances of disregard of the code of ethics on the part of individuals, and the unscientific spirit in which many of them view the lesions of the organs which it is their specialty to treat, make a bold contrast between the high aims of the profession as a whole and the practice of a large number of its members.

In our societies, current literature, and colleges, in the free and liberal professional intercourse which has been steadily growing for more than a generation, may be found the most gratifying improvement over the time when the tendency was to conceal every invention, device, or detail of practice, as the miser does his gold.

It cannot be denied, however, that *esprit de corps*, which is the "chivalry" of professional life, is often forgotten, and the code of ethics which should be our guidance in all intercourse, both with patient and professional brother, is as often ignored as observed. Yet we should be far from attributing every violation of the strict interpretation of the code of ethics to a want of honor or to greed; much of it is no doubt due to absence of the scientific spirit, which should guide the practitioner in the treatment of the dental organs.

The word "scientific" is often used by dentists in their writings and discussions, and they not infrequently misapply the term. Dentistry as practiced is an art, even when the practitioner considers his filling materials as therapeutic agents, therapeutics being itself essentially the art of medicine. A science teaches us to know, an art to do; with the light, then, which a knowledge of the so-called medical sciences sheds upon what we do, our work should be better done, and with greater uniformity in methods and results, than has yet been attained in the prevention or treatment of dental caries.

The remarkable want of concordance in diagnosis and in treatment in dental practice: the absence of *esprit de corps* and indifference to the ethics of questions of judgment between dentists, especially when, as is too often the case, the patient is made a party to controversies growing out of difference in treatment, has undoubtedly been a serious injury to our profession in the estimation of the public. The dental profession cannot hope to gain or to hold the highest respect of the people while its individuals exhibit the ethics of the artisan.

This fault comes to us from a variety of causes; primarily we get it as an inheritance from predecessors who flourished previous to the advent of dental colleges; they were often mere mechanics, without knowledge of the medical sciences, and their unwritten ethics were those of the artisan. Another cause may be found in the fact that filling teeth with gold is artistic in character, requiring the artistic instinct in its performance. The practitioner is thus lured from the scientific aspect of his specialty, which otherwise might stimulate him to find, in the realms of preventive medicine, lines of treatment of a higher order than the merely mechanical and often unsatisfactory one of filling carious cavities with gold, amalgam, or the "plastics." Another cause, which is now happily growing less every year, may be found in the fact that many recruits enter the ranks of the dental profession after having passed a portion of their earlier lives in commercial pursuits, and they bring with them the ethics and ideas of the shop, where the ability to sell often consists in the power to underestimate the wares of a rival. Such men are not likely to get beyond the idea of mechanical achievement in the treatment of dental organs.

Every dentist owes something to his profession, which freely lays its treasures at his feet, and if he is not endowed with sufficient self-respect to avoid practices which will dishonor him, he should be compelled to respect that profession whose sheltering wings include him in their fold, and whose fair fame may be smirched by every mean act of his professional life.

I was asked not long since, by a legal gentleman, the question: "Is there no *esprit de corps* in your profession?" Said he: "A relative of mine whose teeth had just been examined by a dentist of high standing, and pronounced in good order, called upon another member of your profession in a neighboring town, who claims to have found a large amount of work to be done, and has so shaken the confidence of my relative that he and some of his family have left their family dentist." Now, said he, "If this incident merely indicates an honest difference of judgment, then there must be some serious defect in your system of professional education; but if this difference of opinion is, as I suspect, actuated by a commercial spirit, there should be a penalty made to follow such unprofessional conduct severe enough to make it unprofitable for him to repeat it."

I have heard incidentally of a case which occurred recently, of a dentist who made an examination of fillings done by a previous dentist in the presence of two of the patient's relatives, pointing out alleged defects, and using other arguments to destroy the confidence which they felt for many years in their family dentist. I was asked by the lady who related this circumstance to me, "Does your profession allow such conduct?" I replied that our profession prescribed for its members a code of ethics for their guidance, but that no written 'code' could make a gentleman of an individual who was not so naturally or by training.

A gentleman asked me recently for an opinion about the case of an acquaintance who had his teeth examined by a dentist who told him that it would take six weeks to put them in order; he kept appointments every day for three weeks, when, getting a "little tired," he asked the dentist how much more remained to be done, and was told, "I am about half through." "Well," said the patient, "I think I will stop for a while." But soon after that he had occasion to consult another practitioner, who, after an examination, told him, that with the exception of trifling repairs needed in one tooth, his teeth were in perfect order. I prefer not to characterize this remarkable difference of opinion, but presuming that the incident was one of an honest difference of judgment between two professional men of equal intelligence, skill, and training, how may we account for such diagnostic uncertainty. The public is, I believe, more and more coming to attribute such differences to the commercial spirit, and thus our profession is, to a certain extent, made to rest under a stigma.

Viewing dentistry as a branch of the healing art, examinations made to determine which teeth are carious and in need of treatment correspond to diagnosis in medicine, being, however, much simpler in character and easier to determine; yet medical diagnosis has become almost an exact science, while dental diagnosis, among a very large number of educated and prominent individuals often making pretensious claims to high professional attainment, remains so uncertain that it must inevitably bring distrust and ridicule upon our profession.

An example of individual disregard for professional ethics, and of the greed which often overrides every other consideration, was related to me by one of my patients, who stated that her sister's dentist had removed every filling in her mouth done by her two preceding dentists, and is now removing his own fillings.

The use of gutta-percha and other plastic filling materials affords the unscrupulous individual his best opportunity for unprofessional criticism. A dentist who has been in continuous practice for more than half a century recently remarked to me that "the most discouraging feature which he had met with in practice was to be found in those cases in which he had endeavored to save the soft and inferior teeth of early childhood by filling with gutta-percha and other plastic materials, and just when the age had been reached when sufficient improvement in the quality of such teeth seemed to warrant the use of gold with some degree of permanency, they would fall into the hands of some other dentist, presumably through loss of confidence in the family dentist; for some patients think that, unless gold is used from the first as a filling material, we have not used our best efforts, and will seek the services of some one else, who, perhaps, will be only too ready to encourage the waning confidence in his professional brother. It is in just such cases that the individual finds his most prolific opportunity; he gets a patient of fifteen or sixteen years of age, in whose mouth, during early childhood, the teeth were of the frailest character, in some cases, perhaps, showing decalcification of the enamel on the labial surfaces of both upper and lower incisors. No class of cases cause the earnest practitioner more anxiety than do these; it would seem almost like malpractice to attempt to bridge over that precarious period of early dentition with any other of our too few and often unsatisfactory filling materials than gutta-percha. But if the patient is unlucky enough to go into the hands of a man who habitually ignores the ethical side of cases, he frowns, looks unutterable things, condemns the earlier treatment, and fills with gold, the very thing the family dentist would have done at that time had the patient remained in his charge, for, by the fifteenth to seventeenth year the teeth often show great improvement, and sometimes the tendency to decay at that age will have entirely disappeared.

Ten years ago one of my young patients, who had teeth of the frailest character, so frail, indeed, that up to his fourteenth year I believed that I could better arrest the progress of decay by the use of gutta-percha, got into the hands of a dentist at one of the fashionable watering-places, who, between himself and his assistant, after much severe and out spoken criticism, replaced all the gutta-percha fillings with very inferior gold ones, yet that individual has, I believe, on more than one occasion publicly advocated the use of gutta-percha as a preliminary filling-material in "children's teeth of the frailest class."

Three or four years ago a striking instance of individual disregard for the code of ethics, which our profession prescribes for its members, came to my knowledge in the case of a young miss whose teeth were of very inferior quality, and for whom, up to her fifteenth year, I did not dare use any other filling-material than gutta-percha. Having some discomfort with a very frail upper molar, she was taken in my absence, during the summer vacation; to another dentist, who extracted the first molar, and with many expressions of horror hastened to replace with gold what gutta-percha fillings he found in the front teeth. Now, it happened that in this case I had special reasons for wishing to preserve the first superior molar on account of a flat appearance of the face, which I feared would be greatly increased by the loss of that tooth, but when I again saw the patient in the autumn the mischief had been done; the scientific idea which should have governed in the treatment of the case had given place to the spirit of greed. The loss of the molar teeth, with the subsequent increased flattening of the face and the change in the centre line, was a matter of much regret to the child's parents, who were in no way responsible for the unwarrantable interference of the dentist, to whom the child was taken for some trifling repair to the tooth which was extracted.

Seventeen years ago I made an examination of the teeth of a lad of nineteen. I found a full denture of superior quality without caries, and so informed the boy's mother, at which she expressed surprise, and told me that within ten days her son's teeth had been examined by a dentist who recorded, as a result of that examination, "twenty small cavities." That patient is now thirty-six years of age. I have examined his teeth every six months since, and he has at present only two small gold fillings in his mouth. In this case I would not like to attribute the defect in the first diagnosis to other than one of judgment, but the patient becomes, necessarily, a party to the question, and whether the verdict of the public is that such remarkable differences are merely matters of opinion or exhibitions of the commercial spirit, the effect is equally discrediting to the dental profession as a whole.

Now, it may be asked, Have you not overestimated this matter? Have you not cited a few exceptional cases? And do not other professions do these things too? I believe that violations of the code of ethics are practiced to a greater extent than I have herein pictured. I have not selected as examples of this disagreeable feature of our profession a few exceptional cases. I have presented what I believe to be a few typical cases of practices which we all know do exist.

It cannot be denied that other professions have their "black sheep," and that habitual violations of the "code" to a certain extent is practiced in the medical profession, but it is not as out-spoken or as flagrant, and is confined more to the lower stratum of its members than it is in the dental profession, and is more severely dealt with when detected.

I imagine the remedy for abuses which have doubtless greatly retarded free and full association among dentists, and to a certain extent lessened the confidence of the public in our profession, will be found not so much in the arraignment of individuals as in improvement of methods. We still estimate gold as the best material for filling teeth, yet it is a significant fact that the best examples of gold fillings are seen in the teeth of young adults or those who have passed the age when fillings are most imperatively needed, and that gold is often the most unfit material with which to arrest caries of the frailest teeth, particularly those of early childhood, at the very time when effective measures are most demanded.

Neither from the prophylactic nor therapeutic standpoints has dental caries been sufficiently studied as a disease. Dentists have been so engrossed in the artistic treatment of the teeth, and the development of mechanical appliances, that a rational systemic treatment has been almost entirely overlooked. Caries of the teeth may with as much propriety be considered a disease as is "Bright's" or any other lesion affecting the different organs of the body, yet any of these may be controlled or cured by medicinal or hygienic treatment.

A properly regulated diet, with systematic physical exercise for the purpose of promoting assimilation to the extent demanded by nature for a normal condition of all the organs of the body, would do much to control and even cure dental caries. Many of our young patients have really no physiological right to have teeth, so perverted are the nutritive functions of their bodies. Does it not, then, seem that a more rational treatment would consist in a hygienic system which would so build up the tooth-structure that it would be capable of retaining the mechanical stoppings over which we spend so much time, skill and patience, and that would reduce the chances of a recurrence of caries to a minimum?

In the fact that the field-hands among the Southern negroes have exceptionally fine teeth, while the house-servants show rapid deterioration of the dental organs, and in the superiority of quality of the teeth of the laboring classes of Europe over those of the non-laboring residents of cities, may be found significant and useful hints in the treatment of these organs.

In addition to a well-thought-out systemic treatment, a filling material is needed which shall require less time and skill in its application than does gold, and which, when applied, shall possess the qualities of impermeability, insolubility, and a close resemblance to the enamel and dentine of the natural tooth; be non-conductive of thermal changes, and, above all, one that can be inserted in a plastic state, with the ability to fully harden afterwards.

That both of these improvements in the treatment of diseases of the teeth will eventually come, I do not for a moment doubt; and when it does, the scientific spirit will, it is to be hoped, take the place of the idea which leads so many dentists to believe that a well-finished gold filling is *per se* the highest aim of conservative dentistry.—*International Dental Journal.*

ARTICLE II.

TREATMENT OF ASIATIC CHOLERA.

BY ELMER LEE, A M., M. D., PH. B., CHICAGO.

Read in the Section on Practice of Medicine, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

Spasmodic cholera—called also malignant, epidemic, Asiatic, Indian, blue, and pestilentical cholera—is generally epidemic, though not contagious. The first symptoms are generally experienced during the night, sometimes beginning with a light general uneasiness and moderate diarrhea; at other times the symptoms come on violently and follow each other rapidly. In fatal cases death usually occurs at some period between six and twenty-four hours; in a few fatal cases the patient lingers two or three days. The ordinary course of symptoms are more or less diarrhea; the discharges at first feculent, but soon presenting the appearance of rice-water or gruel; there are flying pains, or sense of coldness in the abdomen, as if purgative medicine were about to operate; the countenance is pale; there is nausea, vomiting, prostration of muscular power, and nervous agitation; cramps in the legs, arms, loins and abdominal muscles, more or less severe; small, weak pulse, intense thirst, and urgent desire for cold water; in most cases cold, clammy skin; all these symptoms may appear successively or almost simultaneously. In some cases the premonitory symptoms exist for eight or ten days; and sometimes the patient is prostrated at once. When the disease comes on suddenly the cramps usually begin in the fingers and toes, rapidly extending to the trunk; the eyes are sunken and surrounded by a dark circle; there is vomiting and purging of white matters mixed with flocculi;

the features are sharp and contracted; the expression of the countenance wild and confused. The face, extremities, and often the whole surface of the body manifest a varying intensity of a leaden, bluish or purplish hue; the extremities shrunken, the nails blue, the pulse thready or wholly imperceptible at the wrist, arm, axilla, temple or neck; there is great restlessness, incessant jactitation, severe pain in the epigastrium, loud moaning or groaning, difficult and oppressed breathing; difficult inspiration, with short and convulsive expiration; voice hoarse, whispering, or nearly suppressed and plaintive; the tongue is white, cold and flabby, and the external temperature often sinks below 80 degrees; convulsions recur at short intervals, or a constant tremor exists. The secretions of bile, saliva, tears and urine are entirely suppressed, and a cadaverous odor exhales from the body. The patient retains his faculties to the last.

Some of the symptoms may be disproportionately severe, or may be entirely absent. Those usually regarded as pathognomonic are: watery dejections, blue appearance of the countenance or surface, thirst, coldness of the tongue, and pulselessness at the wrist.

The foregoing description of the symptoms of cholera is indicative of the nature of the disease calling for human aid. The time in which to treat the patient sick with cholera is exceedingly limited What is to be done must be executed with rapidity. There is not a moment to lose between the time when the patient is first seen and the accomplishment of severely practical efforts. Many wise theories may be promulgated, but there are few practical measures that will avail against Asiatic cholera. The experiences during the cholera epidemic of 1892 in Europe, both in Russia and Germany, produced in me a profound conviction that, for the most part, remedial agencies that have been used are of questionable utility. Nearly every prominent remedy proposed and tried has been found to end in greater or less disappointment.

Years ago, great reliance was placed upon the far-famed "mild chlorid of mercury." Twenty and ten years ago this remedy was given in large doses. Three years ago, during the latest epidemic, small doses prevailed. Next to this, the synthetic drug salol, the product of the laboratory of the Imperial Institute of Experimental Medicine in St. Petersburg, was the most widely used and the most favorably received. Professor Nenski, the originator of salol, personally informed me that the value of the drug could not be seriously recommended as of much importance, but that it perhaps answered the requirements as far as any drug could answer, in the hands of his colleagues. Widely circulated and various reports, enthusiastically commending and moderately commending this remedy were received by the Professor in St. Petersburg, but he himself was silent as to its efficacy. The far-famed and seemingly unmatched drug, quinin, has been used, and has been held as a dazzling gem before the eyes of the profession by some of our best men, who believe that cholera is analogous to malarial disorders, and consequently the medicine which occupies the position of keystone in the arch, for malarial treatment, is a remedy suitable to contend with the rapid and desperate symptoms of Asiatic cholera. Quinin has a stout advocate in our own country, in the person of a well-known professor in one of the Ohio medical colleges. It was not used, to my knowledge, in the treatment of cholera during the last epidemic in Europe.

A remedy was brought to Hamburg during the latter part of the epidemic of 1892 by the representative of an English syndicate, who posed as a chemist, not a physician. His remedy was a preparation of iodin, to be administered through the mouth. He called the medicine a periodate, and made some experiments upon patients in one of the cholera hospitals in Hamburg. His remedy, however, was not favorably entertained by the medical authorities in charge of the cholera patients, and whatever claims were reported came through the interest of a friendly correspondent of one of the Hamburg weekly secular papers. To show how misleading some of our supposedly authentic information often is, it is only necessary for me to refer to the report given in the "Year Book of Medical Progress," published in Philadelphia. Of all the progress made, of all the combined investigations during the entire epidemic of cholera throughout Europe in 1892, and there was an immense amount of original investigation and great effort made to discover a remedy, the curious spectacle in the Year Book, which alone refers to the remedies brought by an agent of a syndicate from London to Hamburg, at the closing of the epidemic of cholera, shows that there are some things in our profoundest medical publications that are to be taken *cum grano salis.* Uretin was extensively used hypodermically for its alleged influence upon the secretions of the kidneys, upon the ground that the kidneys were to be aided by irritating them to greater functional activity to eliminate morbid elements through the urine. The result of many investigations recorded in Russian practice show that this drug is not to be commended. Digitalis was used, supposedly to benefit a weak heart. This remedy; if at all useful, could be little more than palliative. The use of acidulated water was extensively employed in different hospitals in Europe as a drink, but not prescribed as a remedy. The water was acidulated with HCl and H_2SO_4. Subcutaneous injections of salt water were made. The proportion of salt was one-half of 1 per cent., and the amount of salt water injected subcutaneously was sometimes as much as a quart at a single injection. In one instance, during an illness of several days, as much as thirteen quarts was subcutaneously injected into the cellular tissue, principally that of the abdominal wall. This process of subcutaneous injection was known as hypodermaclysis. The purpose of the hypodermaclysis was to maintain the volume of the blood. The diminished volume of the blood is directly the result of the waste of its liquid portion or serum into the alimentary canal. In this serous discharge, flakes of intestinal mucous gave the name of "rice-water discharges" to the bowel evacuations, the particles having a resemblance to grains of rice. The general inflammatory state of the intestinal mucous membrane, throughout its entirety, drains the blood of its liquid portion rapidly, and collapse due to stagnation of circulation quickly ensues.

The remedies mentioned are only a portion of those tried, but there is no living advocate who to-day can point with unerring certainty to one single organic or inorganic substance, howsoever administered, that can be safely depended upon in the treatment of Asiatic cholera. Both botany and mineralogy have been searched in vain for a cure for this disease.

The cause of this disease is perhaps accurately stated to be due to invasion of the blood and, secondly, of all the tissues of the living organism, by toxins or ptomaines, which originated in the upper portion of the small intestine at the early stages of cholera. These products of organic activity, whether of animal or vegetable organisms it is here unnecessary to debate; but these noxious products enter the circulation through the villi of the intestine and rapidly and desperately poison the blood. It is clearly proved that the disease is the result of general blood poisoning from an intestinal origin. Whatever the chemic nature of the poison may ultimately be found to be, may be safely left to the bacteriologic laboratory. The practical and intensely important part that remains for physicians seeking to cure patients in times of this disease is to realize how much, as well as how little, it is within human power to do. The human organism is prostrated by a fierce and deadly poison. This poison is in the blood and in the cells of the tissues, and its work of destruction is quickly and effectually accomplished. Reflectively, to say nothing of experimental research, it would seem to me that the rational and only course that could be advocated with scientific assurance of relief is to, as far as possible, literally cause to be removed these products which are death-dealing to the body in which they happen to be found. Now, in this same reflective mood, think for a moment and try with me to determine whether it is possible in such conditions as produce the symptoms of Asiatic cholera, it is safer to introduce other poisonous products to neutralize the noxious elements in the blood and cells, or whether it is a better process to, without the introduction of additional foreign substances, remove what we already find in the blood. To make this proposition clearer, it could be stated in another way, namely, the body is already bearing a crushing burden; shall we add other foreign substances as an additional burden to the load already carried? The principle seems to me to be at fault. The principle is the principle of allopathy, but in the light of facts is it a safe principle to follow? It is reasonably scientific to produce in the laboratory, definite results in vessels of glass by the use of fixed reagents; in the organic laboratory of the living body, no such definite results can be demonstrated. The vital principle is an entity which enters into the formula and may be represented by the unknown quantity x in algebraic equations. Great and laudable efforts have been made to prevent as well as to cure this disease by inoculation.

Ferran, of Valencia, Spain, thrilled the world ten years ago with his proposition of a universal cure for this disease. His glory was then at its zenith. His fame has long since faded. So obnoxious became his proposition to the government of Spain that laws were adopted to suppress Ferran's cholera inoculations.

A worthy colleague and laborious investigator, Professor Haffkin, of Pasteur Laboratory fame, proposed a modified inoculation for the prevention and cure of cholera in 1892. A reporter of the New York *Herald* was inoculated at the Pasteur Institute, and with credentials sent to expose himself to Asiatic cholera at Hamburg in September, 1892. The same reporter had been similarly inoculated by Ferran in 1886 and had the courage to make further exploits in behalf of his newspaper, at Hamburg. A very widespread opinion prevails in America that the exploit of the New York *Herald* reporter during the ten days' stay as a nurse in the Hamburg hospital, constitutes a proof of the validity of Haffkin's claim, but the scientific world of Europe knows differently. *En passant*, it may be interesting to state at this place that further experiments have been made by Professor Haffkin in India with the cholera inoculations and, unfortunately for the proposition, reports have recently come to me from reliable medical sources, that a greater percentage are attacked with cholera who have been previously inoculated than of those who have not been inoculated. This subject of prevention, however, is to be discussed by me in a paper to be read before the Section on State Medicine.

The result of prolonged reflection, covering many years, and the observations resulting from personal experience in the cholera epidemic in Europe of 1892, is the conviction that there is provided in the laboratory of the universe a remedy which surpasses the results of human ingenuity as much as does the sun surpass in brilliancy the light of the artificial lamp. The all-pervading and all-wide remedy, the greatest product of omniscient nature's laboratory, which alone can cope with this pestilential disease of the human race, is nothing more and nothing less than the unmatched, unmatchable H_2O. Pure water is absolutely the only trustworthy cure for cholera, and if it came at a great price it would probably be more greatly valued. The human organism is so constituted that if it is assisted by H_2O, every morbid element may be eliminated out of its domain. The acutely poisoned body quickly recovers its equilibrium and its harmony of action as soon as the processes of elimination can remove the invading poison. In the construction of the mucous lining of all the accessible cavities and channels it is prepared by an undiscernible law to successfully resist the entrance of every form of organism. The products of organic action alone are able to pass into the blood. If sufficient quantities of pure water, of a suitable temperature, are introduced into the body through the natural channels, it is actually possible to wash morbid products as well as organic forms of life, out of the human body. The mouth gives entrance to the caustic germs in Asiatic cholera. That is quite conclusively established. The locality of the development and formation of the toxin in the earlier stages is determined to be in the upper end of the small intestine; and from experience, as well as from the powers of reflective analogy, there is no doubt that the system can be saved from death if the morbid entity, the germ, is literally deluged away from the alimentary canal by the copious use of a remedy that can not be of the slightest danger to the victim. The amount of water to be used varies in different cases. It is impossible to use too much; it is possible to use too little. From the earliest moment that the patient is seen, the propositions should be, first, wash the whole alimentary canal with pure water; wash the lower portion by introducing irrigations of warm soapsuds or merely warm water into the colon sufficiently frequently and sufficient in quantity to cleanse that portion of the bowel effectually; The frequency of washing that portion of the bowel which is accessible from the rectum should be one, or two, or three, or four times a day, according to circumstances. At the same time from one to ten quarts of warm pure water mildly medicated with peroxide of hydrogen or hydrozone should be administered at regular intervals, during the day, as the prescribed remedy by the mouth. If the patient vomits, very well. Immediately re-introduce the quantity of water that was vomited. No harm can be done in any case, and if it is possible to save life it is possible to save it through this method. It is the quickest and the surest method of exciting the activity of the kidneys, and is the safest. It is the rational and effective measure for maintaining the volume of the blood. It is the scientific process by which to establish cutaneous circulation in the capillaries.

The use of simple and useful hygienic measures are the same as in other prostrating diseases. Patients should be fed with regularity at not too frequent intervals, giving the proper time, between administrations of simple food, for its digestion. The use of appliances for maintaining the heat of the body are not to be neglected.

The precise details of the method of treatment indicated at this time will be forthcoming in a subsequent paper.—*Journal of the American Medical Association*, June 22, 1895.

ARTICLE III.

PLASTICS AS A BAR TO BACTERIA.

BY JOSEPH HEAD, M. D., D. D. S., PHILADELPHIA.

Read before the Odontological Society of Pennsylvania, January 12, 1895.

"The perfect filling must be water-tight," so says the time-honored axiom.

But a tooth is everywhere permeable by moisture, as can readily be demonstrated by dropping it, when dry, into aniline ink. It will be stained through and through.

One can hope to put a water-tight plug into a wet sponge quite as readily as into tooth-structure that is moist throughout. Thus we find that neither the axiom nor the filling will hold water.

Should we not rather say that, though a filling leak, it may still be perfect if it exclude germs of decay?

On superficial observation it might be thought that wherever moisture could penetrate so could bacteria; but this does not seem to be the case, as bacteria have not yet been found in normal dental tubules.

Before decay can take place some free acid must first decalcify the enamel and the orifice of a tubule. In this enlarged opening the bacteria may enter, when devouring the gelatin it excretes acid which, dissolving more of the lime salts, allows the germ to penetrate farther in (Sudduth.)

The ideal filling would be composed of a material that is water-proof, bacteria-proof, adherent, and a non-conductor of heat. And, moreover, a material that can readily be placed in the cavity without the slightest danger of marring the enamel edges.

With such a filling in position, the tooth would be as likely to decay as it was before decalcification occurred. But we have not yet found the ideal filling-material.

Gold, while it can be made to .exclude bacteria from its own substance and from entrance at the edges of the filling, is a good conductor of heat, and can only be sufficiently hammered to make a perfect seal in teeth of dense structure. There is no doubt that gold can be made water-proof, as the Bonwill mallet has demonstrated time and time again. Teeth have been partially contoured one day and completed the next, perfect welding having been accomplished after the thinnest film of the moistened gold has besn removed. But soft-foil fillings that have such a record fcr preserving teeth have been put in under water with lasting results. Does this filling preserve the teeth by starving out the micro-organisms? This supposition can hardly hold, as soft-foil fillings have been removed from cavities in a punky, evil-smelling state by means of the explorer, and the dentine beneath appeared sound and dense.

Tin would seem previous to moisture, as any old filling can readily be separated into portions that only partially adhere. It has not been proved, one way or the other, whether it admits bacteria; but at least it can be said to preserve tooth-structure in a manner very similar to soft foil.

Amalgam in itself is water-proof, but leaks at the cavity margins.

Each year we hear of some wonderful alloy that will not shrink from the walls; but, in my opinion, that amalgam has not yet been discovered.

Reducing the mercury to a minimum will do much, but it has been my experience that amalgam fillings of my own and those of my fellow-practitioners all show some slight shrinking from the enamel after the space of some five or six years. But even granting that all these fillings had been badly put in, we still find, when the bulging edges have been trimmed, that in spite of a palpable leak in many instances the cavity remained sound. It may be affirmed that metallic rust gets into the tubules and protects them. That is certainly some sort of an explanation, and yet it can hardly be accepted as conclusive.

Oxychloride of zinc and oxyphosphate of zinc, although adherent to the tooth walls, are readily penetrable by moisture and bacteria.

Gutta-percha, although practically if not absolutely impervious to moisture, invariably leaks at the cavity margins.

My experiments with gold, tin, and amalgam are not yet completed, and so it is possible only to deduce from facts that are clinically well known; but the assertions just made concerning the cements and gutta-percha seem to have been proved in the following manner.

Cones of oxychloride of zinc and oxyphosphate of zinc were made, having a hollow place within that was absolutely excluded from the outer air. Harvard and Pierce's oxyphosphate of zinc was used that became hard as ivory. Some of the oxychloride of zinc cones were made from calcined powder, some from the uncalcined. Those made from the calcined powder became extremely dense.

These cones were sterilized in a steam bath by the intermittent process in the following way: First, they were boiled in water two or three hours; then removed from the bath and placed in glass jars, the mouths of which were closed with absorbent cotton, and subjected to steam over the water-bath for one hour.

They were then allowed to cool for seven hours in an atmosphere of about 70° F.; again subjected to steam for one hour, and cooled over night. Next morning again heated for about an hour. Allowed to cool eight hours. Four hours steam heat, twenty-four hours to cool; one hour steam heat, allowed to cool, and then placed in a bath that after being first sterilized had been tainted with a decayed tooth. At the end of five days' immersion they were taken out and opened. The bouillon had filtered through the substance to the hollows inside. The bouillon found within was swarming with micro-organism.

The steam bath did not have the slightest effect on the oxychloride of zinc, but the oxyphosphate, from being very dense, seemed much softened. This might seem to depreciate from the value of that particular experiment; but it would still seem probable, if the micrococci could pass through strong oxychloride, that they could also pass through the oxyphosphate, that is so similar to it in substance.

On drying the opened oxyphosphate cones, small, shiny crystals lined the inside, which looked not unlike free phosphoric acid that had not become chemically united with the powder. And yet the cones before boiling were extremely dense.

The experiments with gutta-percha were as follows Three canine teeth were taken and opened from end to end. The surfaces of the canals were thoroughly drilled away. One end of each was filled firmly with gutta-percha. A small pellet of cotton soaked with sterilized broth was then placed in the canal. The remaining openings were then dried and filled with gutta-percha. These were sterilized as follows: Two and a half hours in steam bath, four hours to cool. one hour boiling water, two hours in steam bath, seven hours to cool, two hours in bath, two hours to cool, and placed in tainted broth for five days, At the end of that time they were taken out, dried, and passed rapidly once or twice through a Bunsen flame. The gutta-percha was then removed with a heated instrument, the cotton was taken out by tweezers previously sterilized in the flame, placed on a clean glass slide, and wet with two drops of distilled water. This water was then found to contain large numbers of bacteria.

If these facts are so, and the evidence would seem to indicate that they are so, what becomes of the fundamental principle involved in the statement that the edges of a filling must be bacteria-proof.

We know that cohesive gold fillings are almost if not quite certain to admit decay if the edges are not thoroughly tight. Then necessity for bacteria exclusion would seem not to entirely hold in the case of soft foil.

It may or may not be necessary with tin. It certainly is not absolutely imperative in the case of amalgam. With cement and gutta-percha it also does not seem to be an essential to tooth preservation.

And yet all of these filling-materials save teeth, and save them well. Especially is it the case with cement and gutta-percha, that stop decay when nothing else will. These last preserve the cavity walls, and yet allow the bacteria to enter. This seems a paradox, and is difficult to explain. One might say that bacteria need air and food; that cement and gutta-percha shut the germs off from these necessities, and thus render them dormant. But this does not to my mind reveal why some soft, spongy, malodorous soft-foil fillings have preserved the dentine beneath from further decay.

The experiments just reported may seem to be a means of deducing new and startling facts, but in reality this is not so. Soft foil and amalgam foreshadowed these conclusions many years ago.

I should like to add one word for those who shall ever wish to sterilize teeth for bacteriological research. Do not do it in a vulcanizer under steam pressure. I placed fifteen teeth carefully prepared in a vulcanizer, and kept them there for one hour at a pressure of thirty pounds, temperature 260° F.

When they were removed almost all the albuminous material had been extracted. They would have served as excellent specimens wherein college students might easily and readily examine the position and size of the canals, but were hardly suitable for bacteriological experiments.

In closing I would express my thanks to Miss Byrnes, the Fellow of Biology at Bryn Mawr, who not only placed the requisite apparatus at my disposal, but also gave valuable advice and assistance.—*International Dental Journal.*

ARTICLE IV.

DUTIES OF DENTIST TO PATIENT—DUTIES OF PATIENT TO DENTIST.

BY A. W. M'CANDLESS, D. D. S., CHICAGO.

Read before the Illinois State Dental Society, May, 1895.

I shall have very little to say on the second part of my subject, as, in some respects, I think the patient better qualifed to speak from that standpoint, hence, in order that a variety of views might be expressed, I asked three of my patients to write on the 'Duties of Patient to Dentist," and will, as a fitting addenda to what I have to say, read you the sentiments of each of these persons on the subject before us.

The first duty of a dentist to his patient is to study his temperament. Different people must be handled differently, and I think it is well that such is the case, because this fact gives us something by way of variety, which relieves what would otherwise be a monotonous humdrum existence.

We have an opportunity to exercise our ingenuity as to the best method to pursue with each individual case presented. We all know what a difference there is in people, and how one person can exhaust our patience and wear us out in a few moments' time, whereas others will give us no worry or fatigue; but unfortunately for us, we cannot select entirely from the latter class, but must take them as they come. Having satisfied ourselves as to the temperament of the individual, the next step is to gain his confidence. This may be successfully done in the case of very nervous people by pretending to accomplish something without causing the least pain; detain the patient but a short time at the first appointment by cleaning the teeth, or at least, doing what you may in that direction without causing distrust, fear or any unpleasant sensation. You will notice such a patient takes the chair with nerves wrought up to a high tension, every muscle rigid, and the person in a frame of mind bordering on distraction. You will observe a little later on, if you follow the suggestion here pointed out, that the muscles begin to relax, fear and distrust presently give way to a feeling that "this isn't going to be so bad after all," then gradually this apprehension grows less and less as your gentle manner convinces him that you appreciate his feelings, until you gain his entire confidence, and a sense of security comes over him that while he is in your hands he will be treated as an animate being that hath flesh and blood, and is capable experiencing pain. If you will pardon me for an illustration of a personal nature, I will mention it here as it is so appropos of the thought presented.

A gentleman of perhaps thirty-eight or forty years of age was introduced to me a few weeks ago by one of my patients, and I could see by the expression of the man's face that he came more to please his friend than because he had any desire to make the acquaintance of a new dentist, as he was fairly well satisfied with his old one. However, he took the chair, I examined his teeth, explained to him what was necessary to be done, but showed no anxiety whatever to secure him for a patient, as I had made up my mind that he was a little doubtful of the advisability of making a change. He told me the name of the dentist who had had the care of his teeth, and I replied. "I have never met the gentleman, but I have heard of him frequently and always in words of praise, as being a fine dentist and a man of large and lucrative practice." This language appeared to please the old gentleman, and he asked for an appointment. When he came again I saw I had a person of very nervous temperament to deal with and one very much afraid of being hurt. I cleaned his teeth, and caused him no pain; At the next sitting I opened up some proximal cavities and filled them with gutta-percha, and explained to him that that was for the purpose of separating his teeth without pain, that the process would require from three to six months, but that in the meantime the gutta-percha fillings would preserve the teeth as well as any filling he could have. I would say parenthetically that I am indebted to Dr. Bonwill for the gutta percha idea. and I think it a splendid one.

I dismissed my patient after keeping him but a short time for his second appointment, and so I have nursed him along until now I have destroyed and removed the pulp of an aching third molar, and have him almost ready for a little bridge, and a few days ago he was kind enough to tell me that he had lived in Chicago for the past twenty years during which time he had never had a dentist that he wanted to tie to, and that when any of his friends would ask him who his dentist was, he would reply, "Oh, no one in particular. I have never had a great deal done to my teeth. But," said he, "I like the way you go at the fellow. You don't go in 'hammer and tongs,' as if you were working on something that had no feeling, and you don't keep a fellow long at a time. As soon as my wife comes home from California I shall bring her in and have you attend to her teeth. She has been going to another town twice a year to her dentist who had the care of her teeth when she lived there, but you are good enough for me, and I think I can do you some good." I mention this particular case simply to show you that it pays to be humane. Leaving the sympathetic side of the question out and for a selfish motive alone it is good policy to be gentle, for your patients will be so grateful that they will inconvenience themselves very often to not only recommend their friends to you but bring them as well.

And right here comes the thought that my subject is incomplete, for I should also have incorporated with it the duties we owe to each other. If there is one thing I dislike in a person more than another it is that characteristic in a man that allows him to say nothing in praise of another in the same calling. It is a mistake for a man to cultivate the idea that in himself alone are all the good points assembled to the exclusion of all the bad. An individual gets in the habit of speaking sneeringly of a brother dentist, or perhaps even contemptuously. It is remarkable how fast this habit will grow, and the more one indulges in it the more opinionated and disagreeable he becomes; and when he arrives at such a stage he makes himself unhappy and miserable, and takes no pleasure or delight in the company of his fellows. On the other hand, let him be charitable, always speaking well of his brothers who conduct themselves in an honorable manner, let him feel that not all the ability, honor and majesty of his profession is wrapped up in himself, but that his peers are all about him and I will show you a pleasant man, a companionable man, and a man who is always willing to receive or impart instruction—in short, a happy man. Habits are easily formed, but not so easily shaken off. Happy then the man who makes up his mind that there are lots of good dentists in Illinois besides himself, and is not afraid to say so. Some men are afraid to speak well of a confrere or competitor, if you choose, lest those sentiments might cause their patients to leave them and try the other; but it is a grave error. The ordinary individual takes with a great deal of allowance what you may say that is derogatory of another dentist, for he makes up his mind at once that were you not engaged in the practice of the same profession you would not say these disagreeable things. On the contrary, you increase your patient's admiration for yourself by being big enough and broad enough to speak in terms of praise of other dentists. Hence, to enlarge your own practice, to place yourself on a high pedestal in the estimation of your patients, to increase the flow of the milk of human kindness in your veins, to make yourself happier, better, truer and nobler, speak well of your brother dentists, and thus more nearly approach the truest type of manhood.

Having gained the confidence of your patient do not lose it by deceiving him. My experience teaches me that it pays to be honest with my patient. There are times when to cause pain is absolutely essential to thoroughness. In such a case I say, "Now I shall hurt you here for a few moments—do you think you can stand it?" By asking that question you appeal to his pride, and he will invariably answer "yes," even though he be but a small child. In that manner you get his help, and it makes your work easier and pleasanter. If you always tell a patient you will *not* hurt him he never believes you, but if you tell him, "now this *will* hurt you," he believes you always; then if you say "I will *not* hurt you this time," he will believe you; he relaxes the muscles; he does not resist you, consequently the work is made easier for both. I would not have you infer from what I have said that you should humor a patient beyond a reasonable limit. To be sure, with little children our patience is taxed oftimes almost to the point of exhaustion, but in the case of adults I do not think it necessary to go to such extremities. If they will not be reasoned with, if they cannot be persuaded that you are getting no particular pleasure out of their pain, if they absolutely refuse to help you so that you may be enabled to do what is best for them, there your duty ends. It is a waste of time and energy and vitality to try to benefit such people. Then it is time to show them politely but firmly that if you cannot have their co-operation you will stop right there and then. Many persons are by this last resort brought for the first time to realize how much they themselves have been to blame, and will be ashamed of their conduct. Therefore, one chief duty of a dentist to his patient is firmness.

It is the duty of the dentist to use all the aids that advanced thought and investigation have given us to relieve pain. It is your duty to have everything about your office as tasty, as complete and as attractive as the situation and the circumstances will permit, to have every approved appliance to lessen the labor, to have every disagreeable feature as much in the background as possible. Other things being equal, the dentist who has a clean, well-appointed, well-kept complete office, has a big advantage over the fellow who has not. It is the duty of every dentist who practices in a town large enough to have a water supply, to have a fountain spittoon and a saliva ejector. It is his duty, in short, to make the operating room as much unlike the chamber of horrors as it is possible. It is his duty to be successful. My father gave me as his parting advice, when I left home a good many years ago, this motto—"Remember there's nothing succeeds like success." Therefore make a big bluff at being successful anyway. People like to do business with a successful man—there is something contagious about it.

To keep your practice well in hand and to give your patients the best possible attention send for them at least twice a year. When I finish with a patient I say; "Now, if you wish me to have the care of your teeth I shall want to see you every six months, then I can take the cavities before they encroach upon the pulp, and, consequently, you will save yourself expense and your teeth will be kept in better condition, which will be much more satisfactory to you and to me." This is something your patients will appreciate if they take a proper pride in keeping their mouths in a nice healthy condition.

It is the dentist's duty to charge well for his services? a duty, because good fees impel good services. If I make a crown for ten dollars, for instance, and I find I have missed it a little on the articulation, or the contour is not just what it ought to be, or I find the root has not been sufficiently trimmed, how natural it would be for me te say, "Oh, well, I'm only getting ten dollars for this anyway, and it is good enough;" but suppose I get twenty-five dollars for a crown, how much more apt am I to say, "Oh, ho! this will not do! Here is a patient paying me full price for this crown and he is entitled to the very best that I know how to do for him." You might say that the truly conscientious man would do his very best on a crown whether he received five dollars or twenty-five; but, gentlemen, it is not human nature. People do not expect to get seal skins for the price of plush.

Therefore, gentlemen, I say one of your duties to your patients, and a very important one, is to charge well for what you do, because good prices impel good work and bring good people.

Another duty a dentist owes his patient is to attend and belong to the State Dental Society, and as many others as he may be able to attend, in order that he may keep abreast of the times to give his patients the benefit of all that is latest and best.

As I write, this subject grows on me so that I find enough might be said to fill a good sized volume, but do not be frightened, I shall close by saying there are many other duties that we owe our patients indirectly. One is to conduct ourselves in an ethical and upright manner, another is, "Be sure you are a member of the Dental Protective Association," for by so doing you find yourself in good society; another, subscribe for all the good dental journals. And lastly, do your very best at anything and everything you undertake. There lies the secret of permanent success, and by doing your best, "your best will better grow," and in due time ye shall reap your reward.—*Southern Dental Journal and Luminary.*

ARTICLE V.

A PRACTICAL POINT IN THE USE OF DISINFECTANTS AND ANTISEPTICS.

BY A. G. YOUNG, M. D., AUGUSTA, MAINE.

In the large mass of literature which has appeared on the same subject since Koch's paper, "On Disinfection," it is rather surprising that the practical value of one of the suggestions in that paper was not more promptly apprehended and worked out. It was contained in this paragraph:

"Yet it is probable that many disinfecting agents which, under ordinary circumstances are inefficient, may become sufficiently active when combined with moderately increased temperatures; possibly also some such substances which have no disinfecting action at all at temperatures in the neighborhood of 20° C. (68° F.), as the example of carbon bisulphide teaches, may be used with excellent results at somewhat higher temperatures. In this direction, then, is a field open which will reward experimental activity, and which all the more deserves attention because exact experiments are wanting with all but a very few af the greater number of disinfectants and these have been shown to be practically useful only under certain conditions."*

In 1889, Professor Scalji,† of Rome, mentioned the following Significant facts:

Normal urine, when maintained at a temperature of 45° C. (113° F). undergoes fermentation as readily as when left at a temperature of from 15° to 25° (59° to 77°F.). If

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*Mittheilungen aus dem Kais. Gesundheitsamte, 1, 249, 1881.

†Bulletin Medical—Revue D Hygiene, XII, 82. 1880.

5 centigrams of corrosive sublimate are added to one litre of urine, making a solution of 1: 20,000, the urine putrefies at the end of several days if left at ordinary temperatures; but it is preserved a month or more without a trace of fermentation if its temperature is maintained at 40° (104° F.). At this temperature of 40° the antiseptic action is assured with a dose of only 1 : 100,000 of the sublimate.

Furthermore, Professor Scalji states, that when urine which contains 1:100,000 of sublimate is kept at the temperature of 40° several days, and then allowed to remain at ordinary temperatures (15° to 30° C.), no trace of fermentation appears.

Behring* refers to the fact, which has been confirmed by various observers, that a 5 per cent. solution of carbolic acid at ordinary room temperature will not, even after many days, destroy anthrax spores with certainty, but he shows that, when the temperature of the solution is raised to 37.5° C. (99.5° F;), their destruction is complete in three hours.

Caustic solutions of the alkalies are more or less rapidly germicidal according to their strength, but Behring learned that the alkaline carbonates may become very energetic disinfectants when used at higher than ordinary temperatures. After working with strong solutions of carbonate of soda and of alkaline soaps, and finding that they, at degrees of temperature above 70° and 80° (158° and 176° F.), were rapidly effective, made a solution of washing soda about as it is used in laundries, and containing about 1.4 per cent. of soda. This solution at 80°—83° C. (176° — 181.4° F.) destroyed anthrax spores in ten minutes, and at 75° C. (167° F.), in twenty minutes.

He confesses that these results with warm and hot solutions of washing soda surprised him, particularly as he had, through special control experiments, assured himself of the high powers of resistance which his anthrax spores possessed.

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*Zeitschrift fur Hygiene, IX, 395. 1890.

But, so far as I know, Heider* has marked out more fully than any one else the influence which moderately increased temperature has upon the action of disinfecting solutions. Among the results of his investigations we may note the following, in which anthrax spores served as a test and the number of minutes, hours, or days given, being the time required to sterilize them.

Carbolic acid, 5 per cent. solution, at ordinary room temperature, not destroyed from thirty to forty days, at 40° C. (104° F.), four hours; at 55° C. (131° F.) from three-fourths to two hours; at 75° C. (167° F.), from three to fifteen minutes.

Pure carbolic acid and sulphuric acid, equal parts of each by weight, 5 per cent. solution, at 40°, in two hours; at 55°, in thirty minutes, at 75°, in one minute.

Pure cresol and sulphuric acid, equal parts of each, 5 per cent. solution, at 40°, in one hour; at 55°, in five minutes.

Lysol, 5 per cent. at 60° C. (140° F.), sterilization not effected in two hours; at 80° (176° F.), sterilization complete in five minutes.

Sulphuric acid, 1 per cent., at ordinary temperatures, sterilization not effected in seven hours; at 75° C., sterilization in seventy minutes.

Caustic potash. 5 per cent. solution, at temperature of room, failed to sterilize in eight to ten hours; at 55°, spores destroyed in three-fourths to two hours; at 75°, in two to ten minutes.

Hot water, at 70° (158° F.), in eight to nine hours; at 85° (185° F.), in forty to forty-five minutes; at 95° (203° F.), in fifteen minutes.

Sporeless bacteria, of course, succumb much more readily to the germicidal powers of disinfectants. With stophyloccus pyogenes aureus as a test, sterilization was complete at the temperature of 60° (140° F.), with carbolic acid, 1 per cent., in five minutes; with carbolic acid and sulphuric acid, 1 per cent., in one minute; with caustic potash, 1 per cent., three minutes; with lysol, one-half per cent., three minutes.

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*Arcoiv fur Hygiene, XV, 341. 1892.

Several explanations of the reason why warm solutions of disinfectants show a more energetic germicidal action than cold solutions, suggest themselves. One is the well-known fact that the intensity of chemical action increases with increasing temperature; another is that moderately elevated temperatures favor the functional activity of bacterial life and therefore the rapidity with which poisons are absorbed. But when we have to do with sporeless bacteria, and that is the case in nearly all of the real work of disinfection, we have the direct co operation of moist heat in destroying its vitality, even when the increase in temperature is hardly more than moderate.

Practical applications of the results of these investigations readily occur. In the first place, they suggest a grave doubt as to the efficacy of some processes of disinfection and antisepsis as they may be carried out during the cold season. Next, they teach the great advantage of using antiseptic and disinfecting solutions warm or even hot.

In the disinfection of material containing the bacillus of tuberculosis, we have to do with an infection hard to destroy, but about whose powers of resistance, whether against chemical disinfectants or heat, investigators differ. Schill and Fischer* state that twenty four hours are required for a 5 per cent. solution of carbolic acid to disinfect tuberculous sputum. But the disinfection may be more rapidly and certainly accomplished if the carbolic solution for the disinfection of clothing be heated, or if the spittoon containing sputum and disinfecting solution be filled with hot water and set aside to cool before it is emptied. Warm or hot solutions may therefore be used for the purposes of increasing the intensity of action of some of the disinfectants, thus extending the range of their applicability.

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*Mitteilungen aus dem Kais. Gesundheitsamte II, 142. 1884.

When the articles to be disinfected can be subjected to the action of the solution for only a short time, as in washing floors or other woodwork, wiping down walls, or rubbing articles of leather or upholstered furniture which cannot be disinfected otherwise, rapidity and certainty of action should be increased by increasing the temperature of the disinfecting solution.

In clinical disinfection and antisepsis, it is an advantage to use the solutions as warm as practicable. It will sometimes enable us to diminish the strength of our solutions and thus minimize the danger of toxicity, without loss of disinfecting effect. In the dressing of wounds, and as intra-pleural and intra uterine injections Professor Scalji says that he has used with excellent results very dilute but very warm, bichloride solutions (40°—45° C.— 104°—113° F.).

Another point of advantage in the use of warm disinfecting solutions is made by Nocht.* In the use of the so-called 100 per cent. carbolic acid, its slight solubility in water is a hindrance. Mixed with water in the proportion of 5 : 100 a large portion of it remains undissolved. Clothing immersed in the mixture is permanently spotted and injured, for the reason that the fabric readily absorbs the insoluble part as well as the watery solution, and so is in places, subjected to the action of the undiluted agent. If, however, to a hot solution of soap and water, the carbolic acid is added, and the mixture stirred, a clear solution is formed. Three per cent. of soap and water at 60° (140° F.) will render 6 per cent of carbolic acid soluble. The appearance of fabrics soaked in this solution is much better than if subjected to the simple watery solution. The germicidal action of the solution is not increased by the presence of the soap, but heightened temperature makes it distinctly more effective. At 50° (122° F.) a 5 per cent. solution with soap destroyed anthrax spores in six hours.—*Journal of Medicine and Science.*

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*Zeitschrift fur Hygiene VII, 521. 1889.

ARTICLE VI.

HOW TO VULCANIZE RUBBER PLATES BETWEEN METALLIC SURFACES.

BY DR. A. N. DICK, WOODLAND, CAL.

The process which I employ is the following: After the teeth have been articulated, and the model buried in the lower half of the flask, trim away all surplus wax from the palatal side of the teeth, leaving the model exposed.

Now take a sheet of good modeling compound, rolled to the thickness desired for the plate, dip it in hot water and adjust it to the model and teeth, using a spoon to pour on the hot water till it fits perfectly, so as to develop the ruge on the lingual surface. Then with a sharp instrument trim the edges and finish to the desired shape of plate. Moisten the surface and burnish on a piece of extra tough tin foil No. 4, first pressing it to position with a bunch of cotton on the corner of a soft napkin. Let the burnishing be done very carefully with a smooth round instrument.

I prepare my sheet of modeling compound by pressing it between two pieces of glass. In that way I secure any thickness that I desire.

In preparing the plaster for the mold, pour the required amount of water in the mixing cup and sprinkle the plaster on the water without stirring, till enough of the plaster has settled down in the water to give the desired consistency; by so doing, the air that is in the dry plaster will be floated out, so to speak, and not be carried in the mixture as it would be if the plaster was stirred from the beginning, thus securing a mold free from air bubbles. Then pour and let it set.

After opening the flask, pour a little hot water on the base-plate and lift it carefully from the underlying tin foil

If these details are strictly followed by a skillful hand, the result will be a beautiful lingual surface that will require only the felt and brush wheels to finish it. The file and sandpaper will be needed for the margins.

To secure a metallic surface for the palatal side of the plate is equally simple, and, I think, to the mind of the practical man, needs no explanation. However, I would suggest that the same care should be used in mixing the plaster for the model as for the mold, otherwise there would be no air holes in which the rubber would be forced through the tin foil, and thus make a rough surface. The foil for the palatal side should be No. 4, and the model should be wet when the foil is applied to it. The foil should be applied to the model with the thumb and fingers without burnishing, as the burnisher would injure the model.—*Items of Interest.*

ARTICLE VII.

ALVEOLAR ABSCESS.

Dr. N. Pearson says: "We do sometimes meet a case where there is fistula without an apical opening, or if there is one we are not able to find it, and no remedy can be forced through without drilling. In such a case we will find a broken Morey drill made sharp by stoning two sides to a cutting edge, or by using the regular Morey cutter very effective, using care in choice of roots to be opened, or such as are accessible to straight drills, and open them only at the apex. In dealing with roots of this kind I have been able especially in inferior teeth, to force a passage by warming gutta-percha and pushing it into the chamber and canals with the tip of the forefinger or thumb, or an instrument quite as large as the cavity; thus making a strong piston force.

"In still other cases where we have a curved root, and in consequence a liability to make a side issue or other good reasons for not piercing the apex, by using a syringe with hydrogen peroxide and getting as near the seat of the abscess as possible through the external opening, and a very mild pressure on the piston, we may be able to persuade the contents of the sac to imbibe sufficient of the antiseptic to affect a cure. There is still another way of getting at an abscess, which for some reasons we are not inclined to apply other means of remedying, and this is through the process: By using cocain or other local or general anæsthetic, or by proceeding without these aids. The operation is not very painful, and is soon done with. In doing this a sharp fissure drill in the engine may be rapidly run over the end of the root, completely severing the connection between root and sac, followed by any good antiseptic and soothing remedy thought best. Cut, and in a few days all trace of abscess disappears."—*Dominion Journal.*

Communicated.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The thirteenth annual session of the National Association of Dental Examiners was held at Asbury Park, N. J., commencing Monday, August 5, 1895; the president, Dr. L. Ashley Faught, of Philadelphia, in the chair.

The following state boards were represented at the sessions:

Alabama—T. P. Whitby.
Delaware—C. R. Jefferis, D. M. Hitch.
Georgia—J. H. Coyle.
Iowa—J. T. Abbott.
Kentucky.—H. B. Tileston.

Kansas—J. O. Houx.

Colorado—R. B. Weiser.

New Jersey—F. C. Barlow, Chas. A. Meeker, Geo. E. Adams, E. M. Beesley.

Pennsylvania—Louis Jack, W. E. Magill, L. Ashley Faught, Jesse C. Green.

Tennessee—F. A. Shotwell.

Virginia—J. Hall Moore.

District of Columbia—H. B. Noble, Williams Donnally.

The following boards were elected to membership.

Connecticut—Geo. L. Parmele.

New York—Wm. Carr.

New Hampshire—Edward B. Davis.

A resolution, offered by Dr. Barlow, requiring credentials to the association to bear the official seal of the state board making the application, was adopted.

A resolution offered by Dr. Donally last year, and laid over, permitting persons who have been delegates to the association to be associate members without the right to vote or hold office, was taken up and adopted.

Dr. Jack offered the following, which was adopted:

Resolved, That this body would express to the Association of Faculties the importance of an examination of the equipment, methods, and facilities of instruction of all the dental colleges of this country; it being understood that such examination is to be purely in the interest of higher educational standards and toward an approach to ultimate uniformity in the curriculum and methods of the schools, and more particularly to enable safe action to be made with respect to new schools.

Later a communication was received from the Secretary of the National Association of Dental Faculties to the effect that the association had ordered the secretary to secure information from the various colleges regarding their equipment and general facilities for teaching; that this information would be systemized so as to be available at the next annual meeting of this body.

The following "plan of requirements for the recognition of dental schools," offered by Dr. Jack, was adopted, with a proviso that it shall apply only to colleges making application after the close of this session:

That each dental school which may in future come before this board for recognition, must have a teaching faculty composed as follows, to wit: at least three professors of dental subjects, namely, for operative dentistry, for dental prosthetics, for dental pathology and therapeutics. For the medical subjects there must be at least five professors, namely, for anatomy, for physiology, for chemistry, for pathology, and for materia medica.

Its students must also be taught the subjects of chemistry and bacteriology in laboratories adapted to the purpose and under suitable instructors.

That such special school must possess, in addition to suitable lecture-rooms, a well-appointed dental infirmary and a general prosthetic laboratory; also each school must be provided with a room or rooms suitable for manual training in operative dentistry, and must furnish in this way systematic instruction to its students.

All of these provisions are to be determined by careful inspection on the part of the Board of Examiners of the state within which is located the school, or other authorized body duly indorsed by this association. And upon the result of this examination may depend the question of reputability.

The following colleges were added to the list of recognized schools: Dental Department of the University of Denver, Denver, Col.; Department of Dentistry of Detroit College of Medicine, Detroit, Mich.; Dental Department of Western Reserve University, Cleveland, O.

Applications from the following were laid over one year: University of Buffalo, Dental Department, Atlanta Dental College; University College of Medicine, Dental Department, Richmond, Va.; Birmingham Dental College; Cincinnati College of Dental Surgery.

The Committee on Colleges in its report, which was presented by its chairman, Dr Jack, expressed the view that more should be required to establish the right of dental schools to recognition by this body than good organization and the fulfilment of the rules of the Association of faculties. Evidence should be furnished that the teachers are of high standing; that they require of their matriculates the stipulated preliminary training, and that they are carefully qualifying their students in every necessary direction. To ascertain these facts is a matter of difficulty. It is necessary, too, in addition to an ascertainment of the character of the faculties of any school, to discover the degree of confidence which has been developed in the minds of the local members of the profession.

The number of students in actual attendance in all the schools of the country for the session 1894-95, excluding those attending special courses, was 4979, as against 3997 at the previous session; graduates, 1208, as against 911.

The committee also expressed the cônviction that it is becoming evident that the dental schools are increasing in number beyond the needs of the public, owing to the tendency of medical schools to inaugurate dental departments. The installation of dental departments in connection with medical schools is necessarily often incomplete, and there fore the committee believes that restrictions should be placed upon the rapid increase of inefficient dental colleges. As the practice of dentistry is largely based upon knowledge of chemistry and bacteriology, and as manual training has become an integral part of the curriculum of some the better schools,we recommend that the association do not in future recognize any school unless satisfactory evidence is furnished that the students of such schools applying for recognition are being taught in modern chemical and bacteriological laboratories, and are also furnished with every convenience for manual training in prosthetic and operative dentistry, and that this latter mode of practical instruction is systematically carried on in at least the first year's course.

The committee also called attention to the importance of a higher standard of preliminary education, and to the impropriety of schools advertising as instructors practitioners who occasionally clinic before the students, but are not a part of the staff of the institution.

The report was adopted.

The following resolution, offered by Dr. Magill, was unanimously adopted:

Resolved, That we will not in future consider favorably an application for recognition from any college which has as a member of its faculty one who also holds membership in the State Examining Board.

Dr. Donnally moved that final action shall not be taken on the application of any college until such application has been in the hands of the chairman of the Committee on Colleges for at least ten months. So ordered.

The following were elected officers for the ensuing year: J. T. Abbott, Manchester; Iowa, president: H. B. Noble, Washington, D. C., vice-president; Charles A. Meeker, Newark, N. J., secretary and treasurer.

Adjourned.

Editorial, Etc.

SYSTEMIC DISSEMINATION OF TUBERCULOSIS FROM A PATCH OF LUPUS VULGARIS.—Dr. Robert Peter, of Toledo, Ohio, thus writes in the Medical Review: The patient was a white man, aged fifty-eight, who had suffered from a patch of lupus valgaria, situated just below the left ear, for ten years. The patch gradually spread until it destroyed the lobule of the ear and the tissues in front of the auricle. It finally broke through the junction of the aural cartilage and penetrated the anterior temporal vein. The hemorrhage was considerable; but was finally fully controlled, and the patient continued for a year without further change. At the end of that time he had an attack which was diagnosed typhoid fever, and from which he seemed never to fully recover. His condition passed into one of peevishness, slight hectic fever, colliquative sweats, and emaciation. Then there was developed a synovites of the knee, with thickening of the condyles of the femur, and later a cold abscess appeared in the renal region, which was evacuated. Both these processes were probably tubercular. Physical examination of the chest did not reveal anything positive. The important lesson taught us by this case is that general tuberculosis can be established by dissemination from a local process of lupus vulgaris, and this lesion should always be designated as tuberculosis of the skin. The author asks the very pertinent question, Is it not probable that the lupus patch was engrafted by innoculation from a contaminated razor? The matter awakens practical interest by the relation it bears to the arguments in favor of requiring barbers to sterilize their razors and sponges.

HYPNOTISM IN SURGERY.—Fifty years ago Dr. Dugus operated several times upon a woman in the hypnotic state. The patient gave no indication whatever of sensibility. He believed that the phenomena of "mesmeric sleep" might be so utilized as to render it available to all sufferers in surgical cases. A little earlier Dr. Long, one of the discoverers of anæsthesia, had investigated the subject, but did not use hypnotism because of its supposed uncertainty of action. Hypnotism has thrice been revived and twice fallen into disuse during the last century.

"Our institutions of learning should take heed that the manual skill of their graduates does not suffer on account of increased theoretical training. There is no valid reason why the two conditions, manual and mental training, should not be cultivated hand in hand. To maintain our national pre-eminence as conservators of the natural teeth we must, without lowering our value of scientific knowledge, retain the highest regard for operative skill."—"From Report of the Committee on Practice, Dental Society of the State of New York."

Monthly Summary.

PORCELAIN-FACED BICUSPID CROWNS.—Regarding the making of these crowns, Dr. A. W. NcCandless says: "The root having been properly repaired, a band is fitted thereto exactly as though an ordinary telescope or shell gold crown were to be made.

The buccal side of this ferrule is cut out with curved shears at about where the porcelain facing is to be placed. Secure a perfect articulation in the usual manner, and then tack the cusp to the ferrule at a point the farthest from the porcelain; now, with the curved shears, cut away the gold of the cusp down to the point of the cusp, approximating the shape of the porcelain face at the end. Grind the facing, and trim the opening in the gold that is to receive it, until the fit is fairly accurate, but not absolutely so, however, as this is entirely unnecessary, and requires too much time.

When the facing has been ground to the proper shape, remember to always make it a trifle smaller than the space, to allow for the thickness of the gold backing, bevel the edges of the porcelain all the way around, then when the gold backing is thoroughly fitted, which is only accomplished by thorough painstaking, annealing the gold often, and gently tapping to place with a small riviting hammer, place the tooth, backed with pure gold of thirty gauge, in position. Catch the gold backing to the ferrule and cast with sticky wax, slip the porcelain off, invest the gold in long fiber asbestos, moistened with water, leaving only enough gold exposed so that with a small particle of solder, the backing may be united to the ferrule, remove the investment, fill the joints where the solder is to flow, with wax, fill the entire interior of the crown with paste of plumbago, or stove polish, so that the solder will flow where you would not have it go, then complete the soldering of the joints and flow up sufficient solder to give proper contour to the finished crown. At this point a lowe grade of solder is used for filling the cusps. The porcela facing is slipped to place, the gold filed or ground to proper shape and finished, and if the work has been proper done up to this point, a perfect joint between backing and tooth the result. Remove the facing, then with a thin film of cement between the gold and the porcelain, force the facing place.

After the cement has set bend the pins of the tooth carefully outward from each other, and the facing is held wit sufficient strength. In making these crowns 22 carat gold, guage and 22 carat solder is used, with 14 carat solder in the cusps.

After the crown has been finished and polished send it to a gold plater, who for ten cents will plate it with pure gold, which gives it a very beautiful appearance.

The plating is not designated to cover any pits or other defects caused by faulty manipulation, as it brings them out and magnifies, them but a crown thus treated will not tarnish in the mouth and the plating is quite durable where no friction comes, and where friction is the tarnish will not come.

There are a good many things to commend this form of crown—natural appearance, strength and utility. No risk is incurred in soldering, the color preserved, permitting more artistic effect in matching the natural teeth and the absence of that blue line so common at the cervical margin of soldered teeth."—*Detnal Review.*

THE IMPORTANCE OF PROSTHETIC DENTISTRY.—In his essay on "Dental Furnaces" before the Odontological Society of Pennyslvania, Dr. M. W. Sharp makes a strong protest against the belittling of prosthetic dentistry, and the giving the impression that operative dentistry requires greater skill and is necessarily of greater importance than the mechanical. This tendency will be readily seen in the contrast noticeable in many offices between the operating room and the laboratory—the one furnished with every appliance known to modern dentistry, the other bare of everything more modern than lathe, plaster can and vulcanizer. The unpleasant, meagre furnishing of the laboratory has much to do with this feeling. If we would elevate mechanical dentistry we must attempt more difficult operations. There is here a wide field for investigation and improvement, and to one sufficiently of a mechanical turn of mind to becomb a successful dentist there should be facination when once engaged. There is really nothing unpleasant about the mechanical work and fees are relatively much higher—*Dominion Dental Journal.*

FITTING CROWNS.—Dr. Bryan, in the *International*, gives the following method of preparing an opaque black wax for articulating crowns. One part by bulk of lamp black and five parts white or yellow wax are melted together and rolled into sticks. The crown and root being ground to fit approximately, a small piece of this wax warmed is placed around the pin and the crown placed in position. The points requiring grinding will be accurately indicated. The amount to be removed being estimated by "sounding" the wax with a fine point.

BEADED ENCLOSURES IN VULCANITE DENTURES.—W. Storer How, D. D. S., Philadelphia, advocates the making of a "beaded enclosure" on vulcanite dentures to take the place of the vacum chamber so generally used. The beaded enclosure is made by scraping a suitable smooth half round groove in the plaster model of any size or shape deemed advisable. A similar groove across the palatal portion of the model and along the buccal and labial lines of muscular attachment will produce a supplemental chamber-like function of the entire surface of the denture.—*Dental Cosmos.*

CHRONIC ALVEOLAR ABSCESS WITH COMPLICATIONS.—Dr. Truman W. Brophy, in a paper under this heading in the *Dental Review*, makes an instructive tabulation of the complications to be met with in practice. Abscesses failing to respond to ordinary careful treatment are pretty certain to have some complication. It may be in the form of an apex denuded of its pericementum by suppuration. In many cases the fistula may be at a most unexpected point, as into the nasal passage or antrum in case of an upper tooth, or as low down as the clavicle or the nipple in case of a lower. Where the pus enters and fills up the antrum of high more the opening into the nasal passage may close and the floor of the orbit be pressed up, and great pain be caused by pressure on the infraorbital nerve, or pus may dribble from the eye. This condition may deceive even a skilled ophthalmologist. Pus does not always escape at point of lowest resistance, as for example pus formed at roots of incisor teeth may burrow along to hard palate, loosening the periosteum from bone, which condition is very dangerous as it may result in necrosis or caries of bone. Another complication frequently met is where the pulp dies in one or more roots of a tooth, and remains alive in another. The live portion of the pulp responding to heat applied as a test will mislead the operator unless he is on the lookout for such a condition. In concluding his paper Dr. Brophy makes a plea for very careful diagnosis, as very serious results may come from alveolar abscess.—*Dominion Dental Journal.*

PULP CAPPING.—Use gum dammar, cover this with oxy-phosphate of zinc. When hard fill the tooth with what you like.—*Dental Digest.*

FOR SETTING CROWNS.—W. H. Rollins recommends one part gutta percha and three parts vermillion, mixed with heat and careful working, for setting crowns, the combination being strongly resistant to the fluids of the mouth.—*Southern Dental Journal.*

ARGONIN.—A. Liebrecht, of Breslan (*Ther. Monats*, June, 1895), has given the name of *argonin* to a combination of *nitrate of silver* mixed with a *sodium* composed of *casein* and precipitated by *alcohol*. Mayer finds that it is easily soluble in hot water, and with difficulty in cold water, but a 10-per-cent. solution can be prepared. It is readily soluble in *albumen*, and a 10-per-cent. solution in *serum* can be made. It is of considerable strength as an antiseptic, though the watery solutions are less powerful than *silver nitrate* or the albuminous solutions. It does not irritate the mucous membrane.

OF ALL pauperism, the most degraded and degrading, because utterly shameless aand thriftless, is that aristocracy which idly luxuriates in money obtained through speculation, extortion or inheritance.—*Items of Interest*.

A VENT IN YOUR PORT POLISHER.—By Earl D. Eddy, San Francisco.—I have just been drilling a hole in the socket of a plain port polisher. As I was in the act of making this improvement, the thought occurred to me that the makers ought to do this when the instrument is being constructed. I have never seen this improvement in any port polisher but my own, and thinking that you might use the idea for the benefit of the profession, I concluded to call your attention to the value of a vent for the escape of air in the base of the socket. This vent greatly facilitates the setting of the points, as there is no compressed air present to displace them when they are pressed in the socket.—*Items*.

OBTUNDING SENSITIVE DENTINE.—Dry the cavity thoroughly, using warm air and alcohol alternately. Then apply a 10 per cent. "chloroform solution of cocaine," which will be absorbed by the dentine, anæsthetizing it perfectly. Chloroform applied on cotton hastens the absorption of the cocaine.—*Items of Interest*.

ALCOHOLISM IN FRANCE.—A communication by Laborde served as the starting-point of a discussion on the prophylaxis of alcoholism. Rochard painted a vivid picture of the progress of the vice in France and its disastrous results, and proposed the re-establishment of the law of 1865. Lagneau and Lancereaux dwelt upon the relation of alcoholism to tuberculosis, and from the discussion it was evident that the members regarded it as a fact beyond doubt that the increase of the vice in question was in direct relation with the increase of consumption, particularly in men. Of 10,681 deaths from the disease registered in Paris in 1893, 6,553 were men and 4,128 women. As a prophylactic measure increased taxation of wine-shops was generally advocated, with restriction of the number of drinking-places, which in Paris alone is 34,500.

CYST OF THE ANTRUM OR HIGHMORE.—Otto Umgrem had under his care a baker, of thirty-five years, tall and thin, who for a long time had suffered from pain and swelling of the right cheek. Sensibility to pressure, however, was not increased. The tumor was hard and firm. Extraction of the first molar gave exit to a large quantity of sanguinolent pus having a bad odor, but not fetid. On sounding through the extraction wound, Umgren found a cavity the size of a small hen's egg, extending in various directions. There was no issue in the nasal cavity for the pus, which had accumulated in the antrum of Highmore.—*Journal Odontologique.*

MR. LAWSON TAIT is probably the most aggressive opponent of the germ theory of inflammation. He says that during his professional life he has learned and unlearned some some four or five theories of inflammation, and predicts that the present prevalent theory—a phase of lunacy; coccophobia —will soon go the way of the other theories—*Medical Age.*

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ARTICLE I.

PHYSICAL EDUCATION.

HARRIET M. LEWIS, M. D.

Our earliest life has thus been described. "The human begins life as a single cell. He passes through stage after stage of animal life owning a far away relationship to the simple creatures he so far out-strips. For a time he looks absurdly like the embryo of a fish. Later with his undeveloped heart and budding extremeties he more resembles the young bird than any other animal. On he sweeps to the mammalian form and here he can not be distinguished from an embryo pig or dog. Then his cells work away in a distinctly human direction and he becomes indistinguishable from an ape. Even here the cells never make a mistake, never grow confused and finish him into an ape but keep steadily at work until he is built into a human being."

We are beginning to see the first requisite to succeed in life is to be a good animal. The best brain is found to be of little service if there be not vital energy enough to work it.

Muscle fibre is doing the world's work. It carries our bodies to and fro. See the part it plays in respiration and the processes of digestion and excretion. In the heart and blood vessels it propels the life giving current to every organ, tissue and cell. Consider its importance in controlling brain circulation and so controlling all mental processes which result in intellectual and emotional activities And muscle fibre brings every human being into the world.

In performing its function a muscle contracts, relaxes, rests and feeds, over and over, all day long and with the involuntary muscles, all night long, too. When a muscle contracts, the blood can not flow into it. When it relaxes, the blood flows in and in the little period of rest which follows, nutrition goes on. Force continuously applied wears out, put in the little periods of rest and labor strengthens. Watch the rythical movements of a group of men drilling. It is not exhausting work. Until we learn to relax like the cat and the dog and the baby our muscles will never be as well nourished. The woman whose muscles are starved is the woman who never stops, never relaxes and doesn't know how. We see her everywhere, in the car for instance, with rigid back wearing out sitting still. Even in sleep she does not relax but clutches the bed instead of letting it hold her. The great principle to be remembered about muscles is the principle of antagonism. Every muscle has its antagonist and the nice balancing of these is poise, health. To balance a pole, to walk a tight-rope requires very little force but what perfect muscular control, poise. The end of living seems to be growth toward perfection. What speeds a vessel on its course? Not the winds directly from behind. It is the side winds, which seems as much against as for, which fill all the sails. And so the body and mind grow strong by the balancing of antagonistic forces. The child's first utterance when he comes into the world foreshadows his destiny-struggle. One of the first things he does is to stretch out his limbs.

As the mother instinctively grasps them, he makes resistance, the first manifestation of will. Without conscious effort there is no growth of body or mind. The action and reaction between brain and muscle, between mind and body show the closest relationship. Rabbi Ben Ezra says, 'Nor soul helps flesh more now than flesh helps soul."

In a recent medical publication we read "what is the result of our highly differentiated conventional life with its pure mental ideal? The army records, show a lowered physical standard, the neurologist and alienist report a marked increase of mental and nervous diseases, the general practitioner finds a large percentage of his patients needing only less mental and more muscular exercise, the teacher is forced to balance the strain of continual mental application by stimulating physical activity and the true educator recognizes that the brain is not completely trained until the higher motor centres are able to definitely and accurately control the muscles in their infinitely complicated combination and so he sees only half-trained students graduated from the various educational institutions."

Again, "It is possible for any generation to rehabilitate itself by entering fully into its physical inheritance, even so far as to overcome the effects of actual hereditary disease or of physical depression tending to the acquirement of disease."

How much irritability, bad temper, petulance, pugnacity, lack of self-confidence, which make us a pest in a home or a community are all due to physical conditions which a vigorous circulation would remove. Morbid and even feeble conditions of the body tend to generate delusions, selfishness and susceptibility to the worst impulses. Criminals as a class are undersized, undervitalized creatures, often with a deficiency of co-ordination between their faculties, sometimes with little control over their own action and no adaptability to social and industrial functions. The insane are neither strong or long lived and autopsies show disease of every organ.

"We do not expect every evil to be worked off in a gymnasium, every vice to exude through the pores of the skin" but to a perfectly sane man or woman physically. life itself becomes a joy, the wants of mind and body can be satisfied.

Muscle fibre of good quality is something to be desired and how shall it be developed? To improve thought think, to improve muscle use it and learn to think with your muscles. Dr. Elizabeth Blackwell says, "there is as much difference between the action of thinking and unthinking muscles as between the idle gingling of tunes on the piano by a person of quick musical ear and the grand effects produced by an accomplished musician who expressing every faculty of his soul through his instrument can carry his audience with him, through the wide range of passionate sentiment.

Develop muscle fibre by every out-of-door game and sport, by every manual occupation and by the gymnasium. Hygienic habits of dress, diet, air, bathing, etc., as well as true ideals for the mind and body are all indispensable requisits of body training.

The dress should allow every organ, muscle and cell to perform its function. The freedom of the gymnasium suit is like being born again and ever after a woman must have a great respect for her vital organs and ninth rib. The college girl is setting a shining example in this matter of dress and the day of the wasp waist is about over. Wear as little clothing as warmth and propriety will sanction. To carry the weight of the body on the ball of the foot, a broad sole, spring heel or low heel is necessary. On a high heel a woman comes unsteadily down and the jar to a sensitive brain and spinal cord is considerable to say nothing of the abnormal position into which the pelvic organs are thrown. Whenever practicable wear low shoes and thin soles so as to have free use of the ankle joints and muscles of the feet. Educate the feet as hands. Poise, gait depend upon it. The average human foot is not beautiful to look at but in the little child the foot is even more beautiful than the hand. Muscles of the toes are well developed by the bicycle. The Japanese baby as he bobs and blinks and squirms on the back of some child is getting muscle education especially of his feet,

It is said the Irishman temper is due to his diet of potatoes and whiskey. His butter-milk is the only thing which saves him. Pork and potatoes form too much of the farmer's diet. Poor food and monotonous labor are regarded as factors in causing the insanity of farmers' wives who make up the largest class in our state hospitals for the insane. As to what we shall eat a normal appetite is the best guide and the appetite varies with the kind of work. Emerson says even "pie was made to eat." Mrs. Rorer who knows much about food values allows her family pie but once a month. She probably has not the New England love of pie to begin with. To distinguish between a normal and abnormal appetite, a normal appetite can be satisfied, an abnormal appetite can not be satisfied. We should be no more conscious of our stomach than we are of our hearts and livers. There should be no discomfort after eating but rather a sense of well-being, every natural function should be a pleasure not a penance. The seasons themselves furnish us the best food. In theory the vegetarians have the best of it. There is nothing more revolting to one's mind than the idea of killing for food these gentle, friendly creatures to which we become so attached, when ever we see enough of them to become acquainted. It is eating our poor relations as Colonel Hambley calls them.

Oxygen is the tissue builder and we were made to live out-of-doors. Our near neighbor, the monkey, dies of tuberculosis as soon as he is shut up in the house. The North American Indian is dying off rapidly of tuberculosis and the lack of fresh air is a large part of the cause. Where they formerly lived in well ventilated camps and slept around the open camp fire they now huddle into a closely built cabin kept suffocatingly warm by a huge cook stove. The tent was moved from place to place but the little cabin is stationary and accumulates filth rapidly. It is interesting to trace the effect of habit as shown in the inheritance of the present semi-civilized Indian. Go through the dormitory at Hampton and almost invariably each Indian will have his head tucked up in a corner of his blanket and so skillfully it is not easy to find the end, while his bare feet are exposed in even the coldest nights, the old way of sleeping with his feet to the fire. We keep our houses too warm. We should accustom ourselves to lower temperatures. Put on more clothes and take more exercise but don't stir up the fire. 66° is warm enough for the average person, a lower temperature may be enjoyed by a vigorous one.

Bathing is as necessary as exercise and for two reasons. After vigorour exercise an immense amount of worn out material is poured out on the skin. Unless washed off, or well rubbed off, it is reabsorbed and acts as a poison. Then bathing and vigorous rubbing after exercise prevent the too rapid cooling of the surface, keeping the blood from flowing in too great quantities to internal organs and so causing congestion. The moral effect of a turkish bath is wonderful to experience. Sun baths, air baths are tonic, life giving. Benjamin Franklin used to rise early and take an air bath for an hour while doing his writing. Then he went back to bed for his most refreshing sleep. Invalids lying for hours on the warm sand of the sea beach feel themselves growing alive again. The layer of flannel is a disadvantage. Felix Oswald says to think of taking a sun bath or swim in flannels—he should as soon think of taking ice cream in capsules.

Deep, dreamless sleep is best. In childhood when the building up processes are going on more rapidly than the breaking down processes, most sleep is needed; at maturity, when we are holding our own, less sleep and in old age more sleep. The number of hours varies with the individual.

All true emotion strengthens. All sham emotion weakens. In one of the large city hospitals the nurses were so overcome with sympathy for a new patient, an interesting young man with a serious injury, they could not eat their supper. The head nurse quietly remarked, if they had any real sympathy for the young man they would eat their supper, to gain strength to serve him.

The influence of ideals upon the development of individuals can not be strongly enough emphasized. It is said the baby's smile is copied from the mother's face and the baby features set to the pattern of the one who bends above him. How far the round shoulders, drooping head and flat chest which characterize the average student are due to the lack of a high physical ideal rather than to muscular weakness is still to be determined.

Economy is making the most of what we have, and we are wasteful not only in household economy, but in energy of mind and body. We must stop sometimes in order to begin again with a firmer step. Much energy is wasted by uncomfortable clothes, ill-fitting shoes, over-eating, unventilated rooms. We do not realize the power we use in the ordinary moments of life. Our heads should save our heels more. Most of us have some thorn in the flesh which saps in some measure our strength. Power lost through the fatigue of deafness and eye strain is worth calculating. While enthusiasm gives birth to every beneficient action, it is not well to anticipate too warmly or be too interested in anything. If everyone would do his share of the world's work there would be enough and to spare for all and how like the great world this human body is. Part of the world is starving for want of food, part of the world is starving because over-fed, "a lamp's death, when replete with oil it chokes, a stomach's when surcharged with food it starves." A man who works his brain to excess is stealing all the time from his muscles and vice versa. A normal circulation is rather the exception, a condition of congestion or ænemia too much the rule.

Darwin in his late years lamented his atrophied brain areas and he is said to have died a martyr to science. In autobiography he declares "now for many years I can not endure to read a line of poetry and I have also lost my taste for pictures and music, my mind seems to have become a kind of machine for grinding general laws out of large collections of facts. If I had to live my life again I would have made a rule to read some poetry and listen to some music at least once every week, for perhaps the parts of my brain now atrophied would thus have kept active through use. The loss of these tastes is a loss of happiness and may possibly be injurious to the intellect and more probably to the moral character." To the woman who does not have too much of it, nothing is more restful than her sewing and a rocking chair. Geo. Sand said the needle saved her from the insane asylum. The wise man or woman has some favorite pursuit at hand, for knitting work as it were, and while giving the best strength to one line of work, keeps at least in touch with the world in as many directions as possible.

Except in acute diseases and in those conditions of the body where the knife is required, every abnormal condition may be improved by body training. The most degenerate invalid can make a beginning towards a better state of body and mind by some of the simple Swedish movements and Delsarte posings. These are the next step after rest treatment in many nervous disorders There is no possibility of body strain in the Swedish or Delsarte work, and both will keep the body in health, but to increase power apparatus must be used. Here there is danger. Unless an individual has that even development of all the faculties called "common sense" he is likely to become shipwrecked wherever he is. Every gymnasium should be under the control and constant supervision of a medical director, and while every sport and occupation of life has its accidents and calamities, this phase of the question has been exaggerated. Body training will decrease fat, correct deformities, improve pelvic disorders and remove morbid conditions due to imperfect circulation. A woman has been described as a creature with a constipated bowel and a pain in her side, and this is true of a large class. Recreation is the end of exercise. Muscles are just as susceptible to improvement as deformity and when improved tend to stay improved till abused. We must not expect too much at once from physical training. The capacity of each person is limited and changes do not become permanent in one generation. In improving ourselves we are improving still more those who come after us. When good points are acquired they are as difficult to lose as to acquire. We often see very delicate women of good family bearing robust children. Even in free America we are not all born free and equal, we are fettered by our inheritance and limited by our environment, and while it is true that a stream of itself may not rise higher than its source, "by machinery we can send a stream a good deal higher than its source and can make it do there more of vitally essential work than could all the waters of old ocean lying at their level," and training will do as much for the mind and body.

To trace briefly the history of physical education we find that four-fifths of human history is pre historic. A constant struggle with natural forces and savage foes develop man's muscle. The energy and strength of pioneers was a recompense for their labor. Later, degeneration began from disuse. In great cities it is rare to find a third generation. To regain the lost development we must return to simpler modes of living or resort to artificial methods—hence the gymnasium.

There is little to interest us in the history of education prior to the Greeks. Greece is the fountain head of western civilization and physical education was its basis. The results aimed at by physical training were—

First. Courage, strength and development of weak parts.

Second. To furnish a basis of mental development.

Third. The cultivation of form and beauty.

How well they succeeded in the first let Marathon tell. What they accomplished in the second is shown by the fact that they rose in less than two hundred years from a state of barbarism to a high civilization. in the third, they have given us in their art the most perfect proportions. They were ne anatomists. Their observation was the keenest but they knew nothing of modern physiology.

Wm. T. Harris says, "after the development of the personal work of art in the shape of beautiful youth by means of the national games, and the cultivation of the taste of the entire people through the spectacle of these games, was the art of sculpture by which these forms of beauty, realized in the athlete and existing in the minds of the people as ideals, were fixed in stone. Thus Greek art was born. The perfection of form still commands the admiration of the world, yet what delights us most in greek art is not the anatomical exactness to living bodies, but their gracefulness and serenety, their classic repose, whether the Gods and heroes are represented in action, or sitting and reclining postures, there is this undwelling vital activity. In the greatest activity there is considerate purpose and perfect self-control manifested. The repose is of the soul and not a physical repose. Even sitting and reclining figures are filled with activity so that the repose is one of voluntary self-restraint and not the repose of the absence of vital energy. They are gracefulness itself." And had the Greeks also left us statues of an average youth and maiden our debt to them would be much increased. We could then compare them with Dr. Sargent's figures of the typical male and female student of twenty-one years. We could estimate the changes which have resulted from our different life. Our ideals of form are largely artificial, grotesque fashions of dress being substituted for the simple attire of the greeks. With the Greek the dress was always subordinate to the form itself and so the ideal was kept pure and high. It is said that the one thing in which a nation excels is never afterwards reached by another people. Whether this need be true or not, Greece still stands as an object lesson in physical education. In Sparta woman occupied a much higher position than in the rest of Greece, and boys and girls were trained in the same gymnasium., A foreigner said to the wife of King Leonidas, "You are the only women who can maintain an ascendancy over men." "Undoubtedly" was the reply "for we are the only women who can bring men into the world." Again, in one of the plays of Aristophanrs, an Athenian woman exclaims to a Spartan sister, "How beautiful you are, how fresh your skin, how swelling your form. You could strangle an ox." The mild climate of Greece made it possible to live almost entirely out-of-doors and very little clothing was required. Speaking of Greek dress, one feature of it, the girdle, like the Japanese obi, was utterly bad. The skin was kept in order by baths and massage, and the food of the Greek was the simplest, rather a spare diet.

Among the Romans there was no spirit of the beautiful, the idea was to train soldiers; fighters. War brought wealth. Then scholars and gentlemen gave up athletics to the professional athlete, the gladiator.

In the early centuries, as Christianity began to degenerate, physical culture seemed brutal and the body was despised. To the joy-loving Greek the mind and body were co-workers. Love of bodily perfection and love of learning went hand in hand. To the Christian the body was the source of all evil. For long, weary years Simeon Stylites, his body foul with disease, stood on his lofty pedestal and refused to be washed and clean. The over-stimulation of the emotional nature gives rise to fanaticism and moral epidemics.

Chivalry revived physical training and fencing, boxing, dancing, wrestling and horsemanship were again cultivated and continued to the fall of the feudal system.

The German system of physical education has been more like the Roman, while the English have adopted the the sports of Greece.

In sweeden, Ling, (1777-1839) patriot, gymnast and poet, was inspired with a desire to revive the ancestral spirit in the Sweedish people by the help of sport and song, to draw out once more the great qualities, the strength, courage and will, which in old times had distinguished the Scandinavian race. After a hard struggle he succeeded in 1814 in founding the Royal Central Gymnastic Institution, where all the teachers of gymnastics throughout the country receive their education Training is obligatory in every school and the fine bearing of the Sweedish children is said to be noticeable. Swedish medical gymnastics have been introduced into almost every country.

In France, Delsarte did a great work without realizing the tendency of his teachings in the line of physical education. His own daughter Madame Geraldry is said to have declared "It is the expression of the emotions through the body that my father taught. If one wishes to study gymnastics, let him go to a gymnasium." Delsarte, the son of a physician, was born in 1811. After years of labor and study, which took him by turns to hospitals, morgues, asylums, prisons, art galleries, etc., patiently unearthing the secrets and methods of past genius, study which kept him enchained by the hour watching the children at play in the great public gardens, weighing humanity every where and every how, he succeeded in formulating the laws of æsthetic science. He died in 1871 without arranging his life work for publication. Delsarte trained actors, and many are the famous names that have owed much to his instruction. By posture, jesture and facial expression the story is told before the lips utter a sound. This supposes a great amount of muscle control. The inspiring motive accompanying every act makes every movement a pleasure, and attracts temperaments to whom the mechanical work of a gymnasium would be utterly wearisome. Delsarte realized the necessity of preserving a just proportion between nerve force and muscle and taught the phychic transcends the physical always. Gymnastic systems measure results too much by external growth, Delsarte was called an artist philosopher and his philosophy is as fascinating as the truth. Here are a few extracts. "Art is not an imitation of nature but nature illuminated. It is the surest, purest and most constant good in life." "The true artist does not grow old. He is never too old to feel the charm of beauty. The more a soul has been deceived the more it has been chastened by suffering, the more susceptible it is to the benefits of art. This is why music soothes our sorrows and doubles our joys. Song is the treasure of the poor. On his desk after his death was found this sentiment. "Art is an act by which life lives again in that which in itself has no life."

PHYSICAL TRAINING IN AMERICA.

Our forefathers needed no gymnasium, but now, in the crowded city especially, as life grows easier, physical and mental degeneration is progressing. Benjamin Franklin seems to have been the first enthusiastic supporter of physical training. He and Thomas Jefferson advocated abundant exercise in connection with education. At the present time the Swedish system, the German, Delsarte, Dr. Sargent's system all have warm supporters. If the work of Dr. D. A. Sargent of Harvard were expunged from the field of gymnastics it would be found that America's original contributions to the cause have been lamentably few. But with his inventions America is able to make a very respectable showing of originality. He imitates in the gymnasium the natural experiences which have developed the race. Dr. Sargent says, "What America most needs is the happy combination which the European nations are trying to effect, the strength-giving qualities of the German system, the active and energetic properties of the English sports, the grace and suppleness acquired from the French calisthenics and the beautiful poise and mechanical precision of the Swedish free movements, all regulated, systematized and adapted to our peculiar needs and institutions. The highest development of strength, activity and grace is not compatible in the same individual and consequently many persons prefer to sacrifice one in order to gain the other, but life's forces are well adjusted and well balanced."

In the public school, gymnastics as at present conducted, can accomplish little save to equalize in some measure the circulation. Putting the will into the muscles, when the will is already tired, is only making a still greater drain on nervous energy. Severe mental work cannot be compensated for by severe physical work. It is rest for the will which is needed, and the will is rested by yielding to one's humor. Every pound of energy expended on work, either of mind or of body, must be made good by food, rest or sleep. Plato's description of the Greek athletes, "stupid and lazy fellows who did nothing but eat and sleep," describes the condition of rest after severe physical exercise. Mental achievement is the basis of promotion in the school. Is it not high time that more attention should be directed to giving sound and well shaped bodies to the boys and girls who so soon will be the men and women upon whom the race depends, In our colleges for men and women, a resident physician is established as supervisor of gymnastics and recording inspector of physical development among the students. Observations are being reduced to statistical form and we are beginning to have a harvest of treatises. After special diagnosis, special exercise is prescribed for each student, the object in view the development of the race as a whole. Body trainers have been so busy with the practical side of the work that little has been done in the study of the physiological psychological effects of exercise. Harvard has recently established a laboratory for the experimental study of the physiology of exercise as Dr. Fitz says, "This is a clear acknowledgement of the high educational claims of physical training and a distinct advance in the history of physical education." To quote from Dr. Hitchcock of Amherst, "The gymnasium will do much but it is not the natural or ideal form of exercise. To get the real brawn, effective muscle, capacious lungs, a tough skin, the best of digestions and a really reliable heart, one must have more of the natural process of health from mother earth, from air, water, temperature, ozone and the actual touch of soil and grass. No animal, even with the utmost care, thrives in the house Hence the athletic sports have come in again. They have come to stay and we can have the necessary exhibitions without brutality, courseness, unfairness or even indelicacy."

It is the opinion of most educated Englishmen that the cultivation of foot-ball in the public schools has had not a little to do with the courage, address and energy, with which the graduates of Rugby, Eton and Harrow, have made their way through dangers and over difficulties in all quarters of the globe.

Gen. Walker says: In the competitive contests of our colleges something akin to patriotism and public spirit is developed with results on the whole of good. It is a good thing that the body of students should now and then be stirred to the very depths of their souls, that they should have something outside themselves to care for, that they should learn to love passionately, even if a little animosity towards rivals must mingle with their patriotic fervor, that they should at times, palpitate with hope and fear and anxiety in the view of objects which can bring to them personally neither gain nor loss. The contemplation of fine physical development cannot fail to secure a much wider cultivation of gymnastics than would take place without it. And how the college athletic games light up the life of our people. We need more of popular amusement that shall call us out into the open air in great numbers, of more that shall arouse an interest in something besides money getting and professional preferment. At a recent meeting of the Harvard chapter of the Phi Beta Kappa, the orator of the day questioned, whether college athletics have not after all a deeper significance than even the most sanguine attach to them, whether this remarkable outburst of enthusiasm for the perfecting of the human body is not related to the growth of a feeling for art in this new land of ours. It was not an accidental coincidence that the nation of the old world which pursued athletics with the most passionate eagerness was the same nation which carried the plastic arts to the highest point of perfection ever attained. The period of artistic excellence followed the highest athletic period and in the history of any nation the development of art starts late. The Life Class is the true school of the artist. The greatest of all who bear that name have been those who revered the human form, made it their chief study and found in it their highest delight. A great artist of the present day, makes this argument for the physical training of women. "All beauty is sexless in the eyes of the Artist at his work, the beauty of man, the beauty of woman, the heavenly beauty of the child which is the sweetest and best of all. Indeed, it is woman, lovely woman, whose beauty falls the shortest for sheer lack of proper physical training." To those who decry the Life Class this artist pleads a sincerity equal to theirs and as deep a love and reverence for the gracious, goodly shape that God is said to have made after his own image for inscrutable purposes of his own."

Home making is supposed to be the peculiar work for which a woman is best fitted and in which she succeeds best. No where in woman's work is there a more lamentable lack of muscle How many mothers are invalids for life after the birth of the first child because muscle fibre was not equal to the work lain upon it and never recovered from the shock of its over exertion. To make a home what it should be the average woman needs the muscle of five combined or else the still greater power, brains enough to keep five average women effectively at work. It does not matter just how a woman's muscles and nerves differ from a man's in kind or quantity, but it does matter that she have all nature meant her to have and since it is her privilege to perpetuate the race, nature never endowed her with an inferior quality of muscle fiber.

Dr. Sargent says up to thirteen years of age he will accomplish more with a class of girls than boys. The girl is more agile and at puberity is stronger and heavier than the boy. Why such a difference in strength later if not due to wrong education. After puberity Dr. Sargent would keep right on with the training of the girl but would have it different from the boys.

The king of dahomey has for his body guard a band of women, called Amazons, and they are said to be the fiercest fighters.

In those conditions of life where both sexes work out-of-doors at manual labor there is no deficiency of muscular power in the woman. Among our North American Indians the muscular power of the women is perhaps superior and her health record far better. She has gained muscular power at the expense of rounded shoulders and clumsy gait, while the man retains, in appearance at least, the fine physique which comes from out-of-door training for warfare and the hunt. Gravity, unless constantly resisted, tends to drag us down to the earth always, so we see too often in the manual occupations, as in the powerful frame of the farmer, the drooping head and bent form. The out of door sports have an opposite effect and tend to erectness, speed and great range of movements, So we are creatures to work and to play. Compare the muscles of the cart horse with the slender limbs of the racer, both splendid specimens of power but how different in kind. The cart horse may hold his head as proudly as the racer, so the lack of an ideal may have something to do with the farmer's peculiar deformity as well as the students.

The qualities gained by body training are not only strength, swiftness and precision of touch, but steadiness of nerve, quickness of apprehension, coolness, resourcefulness, self-knowledge, self-reliance, fair play, ability to work with others, power of combination, readiness to subordinate individual impulses, selfish desires and even personal credit to a common end. These are all qualities of great usefulness in any work for man or woman and whether certain phases of physical exercise concern women directly or indirectly, the reflex influence upon her of the whole question in all its phases is a powerful one.

In the family the strongest influence is the physician and this work of body training, especially for the girl and woman, is his.—*Journal of Medicine and Science.*

ARTICLE II.

WHAT SHALL WE DO WITH THE TEMPORARY TEETH.

BY EMMA EAMES CHASE, D. D. S.

Read before the Missouri State Dental Association at Pertle Springs, July 10, 1895.

"What shall we do with the temporary teeth?" is the question that makes me unhappy oftener than any other that arises in daily practice. I find that each added year of practice brings added confidence in the treatment in almost every case in greater proportion than in these of the temporary teeth, so I take pleasure in presenting the problem to you, since Burke says: "He that borrows the aid of an equal understanding, doubles his own."

In looking over the literature on the subject I find many interesting facts. There is no good book written on the subject, but the dental journals and transactions of the dental societies show that there has been no lack of interest. At the very first meeting of the Illinois State Dental Society, May, 1866, three of the eight topics discussed related to deciduous teeth. The subject was taken up again at their next meeting, and has frequently been the subject of discussion since then. The very best men in our profession have thought the problem worthy of study, and have written such excellent papers on the subject that one feels sure that one can add nothing to what has been said. Yet the remembrance of the worry caused by some of these cases urges me to bring the subject before you again.

There is no longer any question as to the importance of preserving the deciduous teeth in health and comfort for their natural lifetime. And this, not because of any fear of irregularity of the permanent teeth which would result from contraction of the jaw following the premature extraction of these teeth, but because of the important function they must fulfill in the development of the entire body, including the permanent teeth and jaws of the child. This brings us to the greatest cause, and, indeed, the foundation of most of the trouble we have with the temporary teeth—that is, the very general and dense ignorance of the people.

How is it possible that this important fact of the vital importance of these "baby" teeth could wholly escape the notice of the mass of the people, when for the past thirty or forty years, at least, it has been talked about in every dental society and written about in every dental journal in the country? Is it because we have failed in our duty? I am quite sure that each one of us does something in the way of educating our patients every day; dropping a hint here and there, as occasion presents; but is this *all* we can do? One feels like Mrs. Partington with her broom, when with a few words, even vigorously spoken words, one meets the wave of ignorance which sweeps into the office from day to day, knowing, as one does, that we touch but the outer edge of a mighty sea.

How can we teach these people who bring to us the child with the aching tooth, for its first experience in the dental chair? How can we reach them before that painful opportunity arises and teach them the value of these organs and the proper care of them; that cleanliness, proper food and use constitute the ounce of prevention that is worth so much more than the pound of cure? This, gentlemen, is the first question I ask you to consider.

But then, the child with the aching tooth having presented itself, what shall we do for it? One of the best writers on the subject says that "to be able to treat deciduous teeth scientifically requires far more circumspection and reflection than would a similar condition in the permanent organs." I am quite sure we all agree with him, and I am not surprised to find that the "Arthur" method, and more recently the "Stebbins" method, or use of nitrate of silver, have been very popular with a class of dentists as short cuts out of a difficult problem. That the practice advocated by each of these gentlemen is often applicable to the deciduous teeth—that they are even advisable in these teeth, when they would not be allowed in the permanent teeth—we must all acknowledge, but we cannot admit that they are available for such universal application as their authors advise. The dressing off of decay and polishing of the surface—of the incisors—for the child of five or six years, or even earlier if the teeth are of fairly good structure, is often better treatment than filling; but one would prefer not to blacken them with nitrate of silver, unless the child were very young and the tooth-structure so poor that there was no other way to save them. But with the proximal surfaces of the temporary molars the "Arthur" treatment, or any treatment which leaves a space between them, is simply barbarous. If you have ever had such a space in your own mouth, be it ever so V-shaped and self-cleansing, you will agree with me.

It is these proximal cavities in the temporary molars that bring me to my second question: "What do you do with them?" I refer particularly to those shallow cavities which involve the entire proximal surface. If the tooth-structure is poor, and the child young, we may be forced to content ourselves with the simple nitrate of silver treatment, which will arrest decay. But if the child is five or six years old, and the cavity retains the food *debris*, it must be filled. The poor, little, thin walls seem to call for an oxyphosphate, but the difficulty of keeping the cavity and filling dry in order to secure the best results from the material, and the force of mastication which breaks down any contour, soon result in a space which again holds the food *debris*; and the last condition of that tooth is worse than the first. As to amalgam in these cavities: the tooth-substance seems almost always to resent it, and sooner or later manages to get rid of it. Nor do I like the gutta-percha or the Hill's stopping, which many find so excellent. It is very liable to crowd down between the teeth, forcing them apart and infringing on the gum until it becomes a source af discomfort. The combination of amalgam and oxyphosphate makes the most satisfacfactory filling, in my opinion, but the complication of using two different materials in very shallow cavities, or where one must work very quickly, often makes it impossible to accomplish. I found one gentleman who said he filled these cavities with amalgam in one minute and a half; but I fear that most of us are not so dexterous. In regard to the use of nitrate of silver, many people object so seriously to the blackening of the teeth that they will change their dentist rather than have it used, even where they fully understand that it will arrest decay. And usually the people who object most to the blackened appearance are those whose children's mouth show the greatest neglect. I have found the nitrate of silver very useful in case of pulp exposure, or very sensitive dentine in teeth that are nearing the end of their usefulness, and of which the root is almost absorbed. To cauterize these cavities and then fill without pressure will usually make the tooth perfectly comfortable and useful till the end of its days.

The question of devitalizing the temporary teeth has been so thoroughly discussed in this society that it need not be repeated now. That it is better not to use arsenic, except in the very mild preparation known as "nerve fibre," and that chromic acid or zinc cholide answer the purpose, are generally acknowledged facts and need no discussion. There is no doubt but that a great deal of unnecessary and harmful treatment is inflicted on those deciduous teeth of which the roots are almost absorbed. The outer walls of the roots have not been absorbed, but the entire center of the root and floor of the pulp-chamber are gone, and it is a mistake too often made to try to destroy the pulp in such a tooth.

In regard to periostitis and abscess, the treatment is identical with that of the permanent teeth. As a rule they yield to treatment more readily than do the permanent teeth, but I think most of us meet with obstinate cases of abscess, where, through some difficulty, we are discouraged by a chronic discharge that will not be conquered. Dr. Harlan writes, in answer to my question as to what he did with these abscessed teeth for children between the ages of seven and ten, that he would "treat and fill, generally, at a single sitting."

Another question of vital importance is this: Is it not our duty as the specialist having charge of the teeth of a child, to insist upon proper hygienic care, not only of the mouth, but of the whole body; and to direct a systematic treatment in those cases ef anemic children whose poor teeth and nervous little bodies are the greatest trials of a dentist's trying day? If our friend the oculist or aurist finds a patient in this condition, he will attempt nothing but palliation until the family physician or some specialist has put the entire system in better order, and we, who have the effects of defective nutrition so plainly set before us, certainly owe this duty to our patients, as well as to ourselves.

My last question is: Do you find that teeth of poor structure are benefited by constitutional treatment or special diet?—*Southern Dental Journal.*

ARTICLE III.

REGULATING.

BY WILLIAM J. BRADY, D. D. S., KANSAS CITY, MO.

Read before the Missouri State Dental Association at Pertle Springs, Missouri, July 15, 1895.

It is not the intention of this paper to be a treatise upon regulating, neither a mere display of cases treated; but I shall take the opportunity to urge upon you the closer study of this much neglected branch of dentistry, and try to show how much valuable work can easily be done by the ordinary practitioner, and hope that my effort may prove useful to some one. I am fully aware that regulating cases are but little desired by most practitioners; that this work is considered difficult and generally unsatisfactory, and that the financial return is considered very small in proportion to the time and labor required. But I believe the difficulties have been exaggerated; with correct appliances and judgment in their use, many simple cases can be treated with little expenditure of time and trouble, and made to pay as well as other kinds of work. The complicated cases should be referred, when possible, to a specialist in this branch, as this will always be found to the mutual advantage of all concerned. Regulating is one of the few things in dentistry that can be practiced as a specialty with satisfaction to all, and the profession should encourage the establishment of specialists by giving them hearty support; provided, of course, they are competent and attend strictly to their special work. The simple cases, however, will remain largely in the field of tha general practitioner, and he should know how to treat them.

I fully believe that the time will come when regulating will be as commonly practiced as crown- an bridge-work is to-day, and as successfully. If there were no better teaching in our schools on crown- and bridge-work than there is on regulating, it would be considered as difficult and unsatisfactory. Aside from the lack of knowledge on the subject, it has been difficult to secure proper apparatus for regulating until recently; but that trouble is removed now. There is no question but that the practical side of regulating has received its greatest growth since the introduction and development of Angle's system of regulation, and the placing upon the market of his appliances; thus putting proper apparatus within the reach of every dentist, as well as a complete system of treatment for all classes of cases, from the simplest to the most difficult. So complete is this system, so simple are the appliances, and yet so efficient, that it stands pre-eminently in advance of anything yet offered the profession in this line.

This paper will now deal with some of the simpler forms of irregularity, and their treatment according to this system.

It must be borne in mind that it is just as necessary to have a clear understanding of the case in a simple case as in a complex one. Here has been one of the great troubles in regulating. Dentists have attempted cases without thorough study, and have met failure before really beginning. As in anything else, first find out what is wrong before trying to fix it right. Study each malposed tooth and decide what movement is necesaary to bring it to its place; whether inward, outward, forward, backward, rotation, etc. ' It is thus possible to systematize the seemingly countless forms of irregularity into a few classes and instead of being all chaos and confusion, our cases assume regularity and our treatment becomes systematic.

Right here I want to enter my emphatic protest against the idea that each case is a case by itself and demands different treatment from every other case. The truth is that there is but little difference between cases where the same movement must be accomplished; and what is the proper thing in one case is also the proper thing in other cases like it. To accomplish the same movement requires about the same appliance, case after case, so when the movement required in the tooth or teeth is determined, the appliance suited to that movement is easily selected, and the great bugbear of regulating—the designing of appliances—disappears from view.

Of course there are other things to study than the mere movement required to bring a tooth to its normal position in the arch; it must be considered whether there is space enough to admit of the necessary movement; if not. how to get it: whether by extraction, or by expansion of the arch, and what occlusion would be secured by either method, and what influence it would have upon the fullness of the face, as by expansion of the arch a greater fullness would be obtained than by extraction, which sometimes is needed and sometimes is not wanted. The artistic effects possible upon the face by regulating are a great study in themselves.

The possible movements in regulating are as follows: Forward in the line of the arch, backward in line of the arch, from within (the arch) outward, from without inward, rotation, elongation and depression (in the socket.)

These movements may be single, as a tooth may be moved outward and rotated at the same time, or may be moved backward and inward and be elongated all at once, with possible rotation at the same time.

We will find almost everything we need for the performance of these movements in this lot of appliances, known as Angle's set No. 1.—*Western Dental Journal.*

ARTICLE IV.

SIXTH-YEAR MOLARS.

BY N. PEARSON, L. D. S., TORONTO, ONT.

Read before Toronto Dental Society.

Can this tooth be saved? If you say it can be saved, then I say do so. If you say it cannot be saved, then I say save it as long as you can. Save the remnants as long as the filling will be of any use, and after this put on a crown and save the roots.

This tooth is presented to us under varying circumstances. Let us examine some of them. First of all a child is brought to us after an attack of toothache. The mother (as is usual) has been kept awake all night, perhaps several; the child can't eat, has had no sleep, nor no one else. This is the usual round of explanation, and the end of it is—as an instruction—to take out the tooth and have done with it. The child is between six and twelve years of age. Now what argument is there advanced or to be conjectured why this tooth should be removed? One only, and that is, to relieve present pain, which is no argument at all, but simply an experiment, and should never be entertained either in this or any other case. To remove any tooth because it aches, simply is to forget that we are a profession and decline to the days of turnkeys and forceps, and the years when they constituted all that there was in it. I say it is no excuse to extract a tooth because it pains. Well, have we any arguments as to why the tooth should not be extracted? Yes. First, because it is not necessary to do so, as the desired result can be brought about in other ways. Second, because this tooth occupies a position pre-eminently destined by nature to fulfill a great work at a critical period in the growth and development of the child—a period in which the child is not amenable to reason. It would be no use to say to the child, "Now that you have lost this tooth, you will have to compensate by a careful use of the other side and see that your digestion does not suffer from its loss." I apprehend thet the child would open its eyes, and we could read in big letters some such word as "Rats!" or "What are you giving us!" printed on its astonished face. This tooth was destined to take on hard work at the earliest period of its appearance, both by relieving the temporary molars which may soon begin to be defective, and because the constitution is beginning to demand more solid food and greater variety of diet. It is the connecting link between the milk teeth and the perfect mill of mastication soon to be appropriated. These teeth are the advanced guard, wisely prepared by a great General to do duty in an important field. They are the pioneers which are intended to occupy the ground and erect the bulwark of the physical frame and constitution of the child, and act as defenders of and contributors to its general development. Are we the enemies then that are to fly in the face of that All-wise Providence and mutilate His work, destroy His designs, and frustrate His plans? Rather, I should say, we are His creatures intended to help and further His plans, to assist and encourage by every means in our power the natural laws which govern existence and work out to perfection, so far as we can, the means provided to this end. This is mere sentiment and will go just so far with scientific men. Well, aside from this, let us consider the human side. Did it ever occur to any one of you that the taking out of this tooth is a violent, inhuman and most barbarous proceeding; all this because it is not necessary, not intended by nature, and not provided for as is the case with the deciduous teeth. I now ask the question, Ought these teeth to be saved? Should the attempt be made to save them? All I have said is in the affirmative, speaking from the point of use. I now add to the argument the further very large argument in the make-up of the features. The central position of these teeth and their induction at this time of life has a very marked influence upon the features. The first teeth are never irregular. Nature provides for the wants of the milk teeth, yields to their demands for sufficient accommodation and provides the space. How does she do it? By adapting the teeth to the size of the circle, or by adapting the circle to the size and number of the incoming teeth? The jaws are enlarged to suit the demands of the teeth.

Ordinarily the natural inception of the sixth-year molar will be met by a growth of bone, a prolongation of the circle to meat the demand, and, by the time of its full development, the jaw and the alveolus have been added to the original formation to just the extent required for this tooth, all tending to add to maturity, expression and facial development and symmetry. Here we have situated the largest tooth in the formation, central as regards mastication, first to get to work in grinding, almost invariably perfect antagonism, never irregular, and, in fact, the keystone of the whole arch, put there designedly, intended for work, and come to stay. Unfortunately it is not always perfect; sometimes very imperfect, often troublesome, generally weak, subject to infirmities so are children, always the object of solicitation, and a stumbling-block to the professional, amateur, and "others." I now add emphatically to the *saving* argument, that this tooth should never be removed for regulating purposes, except in rare and very exceptional cases, and never before the appearance of the twelfth-year molar. I am not speaking by the book, I am now speaking from close observation for many years particularly directed to this point. For years I directed my course by printed instructions from standard authority. I extracted sixth year molars where there was reason to doubt a prolonged existence or a slight deflection in the anterior teeth. I don't do it any more. I never looked at the roots of a first molar without a sigh of regret, a tinge of shame, and a professional blush, and I don't do it any more—any more than I can't avoid. I bend my energies to avoiding it, and generally succeed. In the early days of my hallucination for extracting these teeth I made victims of my three eldest children, and can never forgive myself for it. I present you for inspection several models which speak for themselves; also, by contrast, you may compare other models before you with these teeth *in situ*. I need not comment on either.

These teeth are removed inconsiderately and indiscriminately—without consideration as to the effect upon the facial expression or use in mastication, and without discrimination as to proportion or malposition of other teeth.

It is frequently the victim of malice propense, some of the best authorities and most competent writers holding that where a predisposition to caries exists, it is advisable to anticipate its loss by early extracting, and prepare the way for its successors to climb into its position, and in the near future, or at the age of twenty, say, the teeth are in better state than would be by a doubtful first molar. If a competent dentist sits down and examines the four first molars as to all the points involved, and concludes that there is no use in trying to save them, the parent is then absolved from responsibility; but I should like to know upon what grounds he is acting before I make up my mind that there is no other way out of it. The same prolongation and development of bone takes place at the eruption of the second and third molars, speaking in a general way. A gradual development is brought about from the time of the demand for more room by the incoming first molar until the appearance of the last one, when it ceases. We remove the first molar any time between the seventh and twelfth years, and further development ceases until the space is occupied and further demand is made by the wants of the third molar for accommodation in the circle It is a very difficult matter to determine just how much has been added in each case, or just how much the natural development has been interfered with by premature extraction, but it does seem to me that there must be considerable deviation from normal state in view of the fact that a slight change of position of any one or more teeth, such as is done sometimes in regulating, alters facial expression, and want of symmetry is dependent upon such slight changes as we are able to produce by a little pressure judiciously applied.

I apprehend that no difference of opinion would exist in regard to these teeth in a general way where they are well-developed, reasonably good and easily treated, and due attention exercised upon them by parents and the dentist. It is when, by ignorance and negligence, they are allowed to become objects of care and annoyance that our attention is directed to them.

Now, supposing that we are convinced in our own minds that they "ought to be saved," the next point is, can they be saved? I think they can, generally, not invariably. A good deal depends upon the operator. If the dentist says "that the tooth is better out," the responsibility is taken off the parents' hands and remains with the dentist. Whether right or wrong, wise or unwise, he shoulders all the consequences. Whether he is doing this to hide his own weakness or inability, or a conscientious conviction of the advisability of the course, the consequences are on his head. If he says that the tooth may be saved and made useful, the reasonable conclusion is that he has a reason for the hope that there is in him and the onus of the situation and condition that the tooth is in lies with the parties responsible previous to his cognizance. The dentist does his best to save the tooth, and at all events will no doubt succeed in relieving present pain, which is the beginning of the end.

I am aware of a case in Toronto which was taken to a father in dentistry, whose professional lexicon commences with the word *extract* in large capitals, followed by such other words as extermination, extinction and substitution. In the particular case I am referring to he was persuaded, against his will, to endeavor to save the tooth. After such treatment as he thought advisable, he put in an amalgam filling, with the instruction that he might see the case if any further trouble ensued. The next step was to drill a hole below the gum margin. That tooth has been in active service for sixteen years, and lately yielded to rational treatment with a fair promise of beholding its great grandchildren in the dim future. Here is a model of teeth taken from a subject operated on by the same bright shining light, whose specialty is the "regulation of children's teeth."

Let me end this paper by a few conclusions which may or may not be orthodox. The designer of the turnkey was a great benefactor to the human race. Many no doubt there were who heaped benedictions on his inventive genius. Their day is passed. We shall never know the history of first molars during the five or six thousand years of pre-historic existence or what the custom was in the way of dealing with them, The inventor of forceps introduced a new era in dentistry; and many called him blessed.

It has been left to the days of the present generation and the introduction of high art in saving teeth during the last few years to minimize this agony, and we hope that the time may come when the ignorance of the parents will no longer be an excuse for their employment, and that by a combination of opportunity and intelligent application of the resources first molars may be allowed to fulfil their destiny.

One of the questions propounded to the class graduating in 1869 was, "What would you do with an abscessed tooth." The answer offered by a clever, well-educated Normal School graduate, "Jerk the thing out," apparently pleased the examiner, for he said he agreed with the sentiment. Better counsels prevail. Now a-days we are on a higher plane, and such proceeding is no more necessary than removing a great toe for an ingrowing nail.

I am aware of some of the difficulties met with in every-day office practice. I sympathize with the perplexities of the dentist and the terror of the patient, also I feel for the unfortunate parent who, perhaps, is most to blame for the present state of things. I can't point to a road that should be universally travelled, except to say, that it is always a safe line to relieve the distress and fill temporarily, with the urgent understanding that you must be consulted frequently, and held responsible for consequences as to effects outside of the tooth proper. I can see no reason for early action in removing, except to allow early occupation of the field by incoming posteriors, which is not going to increase the masticating surface, but merely shift its locality. I do see where harm may be the result of injudicious removal to the features, to the masticating power, and to the general health and physical make-up of the patient.—*Dominion Dental Journal.*

ARTICLE V.

EPULIS.

BY A. H. BEERS, M. D., D. D. S, L. D. S., COOKSHIRE, QUE.

This diseased condition is one not foreign to the practice of dentistry, as the tumor is frequently met with in ordinary practice. I intend to give a brief description of this tumor, and also report a case that I had the opportunity of observing some time ago under the supervision of several distinguished surgeons of Montreal. The term "epulis" is applied to various tumors of the gums. In reality they are not connected with the gums, but with the periosteum of the alveolar process, especially that part intimately connected with the teeth.

Two forms of this tumor are usually described: simple, or the fibrous variety, and the form that contains myeloid elements and is considered as a malignant type.

The former is the more common, and is seen as an enlargement of the natural fibrous tissue of the gum. It is covered with mucous membrane continuous with that of the gum, but from various mechanical causes—such as the teeth, tongue, etc—are liable to become inflamed and lacerated, and thus stimulate a malignant growth. Occasionally this growth presents ossified parts, and in this respect differs from the myeloid variety, which never ossifies. Spiculæ of bone may be prolongated from the maxilla into the fibruous variety. It may grow between teeth and gradually force them apart as it increases in size, and produce great disfigurement. The myeloid form is much more vascular and increases in size more rapidly. It frequently exhibits itself as a large fungating growth, and is always more serious in nature and more apt to occur after removal.

The treatment of these two forms amount to about the same thing—that is, entire removal of tissues that surround the growth. Its occasional appearance in apparently edentulous jaws will be found, on close examination to be due to overlooked roots of teeth, as a rule. Its occurrence is dependent upon the presence of teeth. Nothing short of the entire removal of the tooth or teeth and bone that is contiguous will ever effect a cure. I lately saw a case that had been treated by a medical gentlemen. He merely snipped the pedicle six times, and it always came again. The cause was an irritating left lower cuspid, and the growth extended from the right lower incisor to the second molar. The growth was indented by the teeth, and consequently ulcerated. The breath was extremely fetid, and signs of constitutional disturbance present. The growth was, roughly speaking, the size of a hen's egg, but more flattened, of course. It was simply fibrous and of slow growth, but was ulcerated from indentation of the upper teeth. The continual absorption of pus would naturally account for constitutional disturbances.

I saw a case in a young girl, aged 17, which I will try to report.

January 20th.—Came complaining of swelling on inner right side of alveolar process of upper jaw and in region of molar teeth; frontal headache and general weakness. Patient first noticed swelling seven months ago, and supposed it to be a "gum-boil." The swelling was lanced by a dentist, and after a few days was "removed." It recurred in a month. Two months later it was removed with a dens sapientia, which had partly cut through the gum. Soon after this the tumor reappeared, and increased to the size in which I saw it—that of a walnut. Movements of the tongue and eating caused slight bleeding. Her father and mother are alive and healthy. Twelve brothers and sisters died in infancy; two brothers and one sister alive and well. One uncle has benign growth on chin. Grandmother dying with cancer of rectum. The patient is a tall and very well nourished girl, and is otherwise healthy, as was proved from physical examination. The right tonsil and pharynx and surrounding mucous membrane are injected; growth bleeds readily on slightest irritation.

January 25th.—Patient etherized. Mouth forced open and kept so with gag. Second right upper molar removed, and most of the growth which was adhering to the dental periosteum came away with the tooth. Remainder of growth and part of alveolar border of jaw cut away with forceps.

January 26th.—Tissues in neighborhood considerably swollen. A mouth-wash (warm) of boracic acid given.

January 27th.—Swelling considerably reduced. Diet, beef-tea and milk.

January 30th.—Patient discharged, with wound in a healthy condition.

February 18th.—Patient was seen again, with recurrence of growth, probably due to incomplete removal and originating from some part left behind in the former operation. Under ether, the first upper right molar was removed and alveolar process removed with bone-forceps. Roots of tooth were very divergent, and much difficulty was experienced in removing it entire. The growth was examined microscopically, and found to be a simple fibrous tissue growth. The patient, after six months, has had no recurrence.—*Dominion Journal.*

ARTICLE VI.

HABIT SPASMS.

BY DR. E. T. LOEFFLER, SAGINAW, MICH.

Children often, and adults sometimes, present spasmodic movements, such as winding, twitching the mouth, jerking the head, movements that have a half-voluntary aspect, but which the individuals are unable to control. The patient is said to have "got a trick" of moving the part. Weir Mitchell calls this "habit chorea," but "habit spasm" is perhaps the better term.

The condition is met with chiefly in childhood, especially in the second half, but it sometimes commences in youth, and even in adult life. In young women it is often associated with symptoms of hysteria, and there may be a difficulty in deciding whether certain spasmodic movements are to be regarded as of reflex dental neurosis, of habit spasm or of hysterical spasm.

When it commences in childhood, the affection commonly ceases after a few months or a year, but it occasionally goes on to middle life or even longer. Rarely it begins late in life, but is then generally permanent. In early life it occurs especially in nervous and excitable children. The affection is said to be more common in females than in males, but is often seen in boys. Some writers claim that impairment of general health often precedes the development of the movements; occasionally they appear to be due to some special influence depressing the nervous system, overwork at school, a fright or some injury. In one case, for instance, the onset followed a fall into water.

Again we notice that frequently there is a history of other neurosis in parents or other relatives. It is quite probable that the affection often arises by imitation; not direct imitation, perhaps, but the witnessing of such movements is apt to produce a peculiar excitability, which finds expression and relief in movements of a similar nature. In cases in which something like direct inheritance can be traced, it is probable that this influence has been at work. A father, for instance, had such movements in the face all through his life, and two children likewise presented them. So we must frankly admit that in many cases no causes can be traced, and the affection seems to be the result of the restlessness of childhood, specialized, as it were, in a particular direction. In one instance a relative of mine, a girl, who began to blink the eyes in early childhood, still did so at the age of thirty.

In another case reported to me, a clergyman of thirty-seven was greatly annoyed by an involuntary smile, of somewhat meaningless aspect, which would cross his face from time to time without the slightest corresponding emotion, and even when he was engaged in public in the most solemn parts of the church service. It never troubled him when he was preaching or in conversation, but it often occurred when he was looking at another person and sometimes gave rise to misconception. It commenced at the age of sixteen, and was at first more than a smile, being actual laughter, but it gradually subsided to its present form.

The following are two important cases which have been under my special inspection and treatment for some time. The first, a Mr. E. Short, of Saginaw, W. S., aged about seventy. The trouble came on about six years ago while living in Texas. It began by a slight twitching of the muscles under the right eye. There was no pain at any time. One year from the time it started he consulted a dentist who extracted the right upper cuspid, but this gave him no relief. Now all the upper teeth are wanting, but the trouble still exists, being periodical in its nature, and the right eye partly closed.

Another was that of a lady, aged about forty. Her trouble came on about four years ago, and in very much the same manner as that of the previous one. She has a twitching of the left masseter muscle at intervals, and also of the lower eyelid of the corresponding side. This trouble has been a source of a great deal of annoyance to her, so much so that she consulted a number of physicians with the hope of getting relief. She was finally induced to have her teeth examined. I extracted all the diseased teeth that she had in her mouth some time ago, and instructed her to report to me in case she received any benefit therefrom; but I have thus far been unable to get any word from her.

There are many well marked cases on record in which the cause of this muscular disturbance of the face was found to be due to an irritation reflected from diseased teeth.

The subject is of the profoundest interest and importance, but is little understood even by our best investigators. One fact, however, seems to be apparent, and that is that there is some abnormal relation between efferent and afferent nerve impulses. The trigeminal nerve is undoubtedly the most remarkable nerve in the whole nervous system, especially when we consider the intricate connection of its nuclei with those of the various motor cranial nerves.

This will undoubtedly afford ample explanation for the many reflex disturbances. But why this irritation due to pathological conditions of the teeth, for example, should in one result in a wry neck or facial spasm, and in another in blindness, in deafness, in chorea, in dyspepsia, in epilepsy or in mania, is an inquiry at present unanswerable and almost beyond our comprehension.

As "habit spasms," or whatever muscular disturbance it may be, are generally increared by observation, it is very important that little notice should be taken of them by the friends of the patient. Sometimes the movements will then cease without further treatment.

They are seldom under direct voluntary control, and the endeavor to prevent their occurrence may be futile, especially if the attempt is made under the fear of threat and punishment. But the promise of a reward at the close of each day on which the spasm has not occurred will sometimes gradually cause their disappearance; a strong desire, free from any depressing emotion, effects that which the will cannot directly achieve. Any obvious defect in the health must be made good, and a change of air is often very beneficial, especially when a change in companionship can be secured at the same time. The deterring influence of strangers is often very marked. Nerve tonics, such as quinin, are sometimes of use. If there is much excitability of the brain, or if spasmodic movements are seen, bromid of potassium may be needed, and occasionally a local blister is very efficient. The smiling clergyman mentioned above ceased to be troubled after he had for a few weeks taken some iodid of iron, and a dose of bromid each time he had to conduct a service in church.

In recent cases of facial spasm, apparently excited by cold, free diaphoresis should be employed, and the face and side of the head bathed frequently with hot water. If there are indications of organic disease, the nature of this must be ascertained, and, as far as possible, treated. All causes of reflex irritation must be sought for and removed; decayed teeth should be extracted, especially if they are on the same side as the spasm. Occasionally such nervine tonics and stimulants as zinc, nitrate of silver, asafœtida and valerian may be given, but in the vast majority of cases they conspicuously fall. Sedatives applied to the skin seldom exert any influence over the spasm. In the use of morphia for the relief of spasm it is probably more desirable to inject it in or near the seat of spasm than in its anodyne use. The temple is the most convenient locality. Electricity has been largely used, and has been highly praised by some of its advocates, but in nine-tenths of the cases it fails even to relieve.

Stretching the facial nerve has been of late adopted, but with small results. However trivial many of these cases seem to be, they often cause more annoyance than many diseases of far more serious nature.—*Items of Interest.*

Editorial, Etc.

WHY WILL NOT FIRE BURN BRIGHTLY WHEN THE SUN SHINES UPON IT?—This question naturally suggests itself whenever we attempt to light a match and watch its combustion in the full sunlight. A few moments' consideration of some of the principles which lie at the foundation of modern theories of combustion will enable us to answer this question intelligently.

What is flame? Answer—Flame is burning gas.

What is burning? Answer—Burning or combustion (as it occurs under ordinary conditions) is the rapid union of bodies with oxygen—a phenomenon attended with the evolution of heat, and generally also with light. We may have combustion attended with intense heat, but with little light, as in the case of burning hydrogen, or with more or less heat and considerable light, as in the case of carbonaceous substances, as wood, oils, illuminating gas, etc.

The effect of sunlight upon chemical combinations is variable. With certain bodies, for example those employed in photographic processes, the action is rapid and powerful; in other instances, and in the one under consideration, sunlight is without appreciable effect. That is to say, in the combustion of wood, sunlight has no effect upon the rapidity of the intensity of the chemical action which we call burning.

It is true, however, that burning wood and other substances undergoing combustion, appear far less brilliant in the sunlight than otherwise, but this is wholly the effect of contrast. The stars do not show themselves by daylight, and even the electric light—unless very intense—fails to cast a shadow upon a spot where the sun is also shining. So it is with the light from all burning bodies. The answer to our question then is this:

Fire only appears to burn less brightly in the sunshine than in the shade. The actual brilliancy and the rapidity of the Combustion are the same both in sunlight and in darkness. —*Popular Science News.*

IS OXYGEN A SIMPLE BODY?—Mr. E. C. C. Bally, preparator to Professor Ramsay, has just presented to the Royal Society of London a preliminary note tending to establish the fact that oxygen is not a simple body, as has hitherto been thought, but an association of two distinct gases. The fact that he announces is this: If oxygen be submitted to a silent electric discharge, the gas that goes to the cathode, according to the experiment, while remaining oxygen, exhibits a density sensibly different from that of non-electrified oxygen. In the case of long sparks, the density is less. The opposite is the case when short sparks are made to act. Is this as much as to say that the ordinary density of oxygen represents simply the major part of the density of the molecules of the gas, and that the silent discharge has the effect of sorting out such molecules in assembling those that are of the same weight?

Monthly Summary.

PEROXIDE OF HYDROGEN.

BY J. PARKER, PH. G., M. D., ST. LOUIS, MO.

Published by the Annals of Opthalmology and Otology, of St. Louis, Mo., April 1895.

(Abstract from *The Times and Register*, June 8th, 1895.)

I have used peroxide of hydrogen quite extensively for cleansing discharging ears, the nasal and accessory cavities, and have tried all of the brands of the preparation in the market, and once thought one manufacturers make as good as that of another, bought the cheapest as a matter of economy, but recent experience has taught me that the difference in quality is greater than the difference in price. After an unpleasant experience with a solution of peroxide of hydrogen which severely injured the mucous membrane, I bought and examined, chemically, a bottle of each preparation of $H_2 O_2$ in the market, and was surprised to find so much difference. Some are useless, and others worse than useless because they contain too little oxygen and too much free acids (phosphoric, sulphuric, hydrochloric). I now order Marchand's (medicinal) exclusively because I find it contains the desired quantity of available oxygen and not enough free acid, to be objectionable, and its keeping properties are all that could be desired.

By inquiry I learn that Marchand's is the preparation that is used by almost all surgeons, and it is considered by them the standard.

—My personal experience with peroxide of hydrogen confirms entirely the statement of Dr. J. P. Parker, I have used exclusively Marchand's brand until lately, when I experimented with hydrozone. Then I gave up entirely

the use of peroxide of hydrogen and use hydrozone on account of its strength, which cannot be compared with any other brand, even Marchand's. I must say that the results which I obtained with hydrozone are most gratifying.—ED.

WEDGING TEETH WITH RUBBER.—This is still probably the most common way of obtaining the necessary space for making proximal fillings, and is the means of inflicting much unnecessary pain. The practice of inserting the rubber to be worn for days, and sometimes weeks, before operating on the teeth, is cruel, barbarous and unscientific. The object is just as thoroughly accomplished in a few hours, when gutta-percha may be pressed tightly between the teeth that have been forced apart, which will retain the separation and allow all peridental disturbance to heal.

Our practice for years has been to have the patient adjust the rubber early in the morning, and report to us at five o'clock in the afternoon for the gutta percha substitute. The thickness of the rubber supplied the patients is determined by the space required. The gutta-percha is worn for ten days or two weeks, when all soreness has entirely disappeared. The gutta-percha serves the double purpose of retaining the space and pressing away the gum from a cavity which extends well down toward the cervical margins. The cavities are partially prepared, the dam applied, and a separator adjusted to hold the teeth firm during the introduction of the fillings. We know of no more satisfactory means of separating temporarily, and none less free from pain or danger.—*Register.*

PULP-PROTECTION.—The writer says that the floor of the cavity in a carious tooth sometimes has a place where the wall of the pulp chamber has but a thin septum between it and the cavity-floor, and the pulp must be protected from thermal shock or irritation. A suitable sized disk of rubber-dam is very good for this purpose. When the cavity is formed and dried for filling, lightly touch the cavity-floor and walls with a very little mastic varnish. Place a small disk of dam over the cavity-floor; mix some cement, suitably soft; put a little on the center of a second disk and place its cement side on the first one. Then spread the cement under the second disk with a ball burnisher to completely cover the cavity floor and partially cover the cavity-walls. After the cement has set, the cavity can be filled with whatever material as preferred. The pulp will be doubly protected by the two rubber disks, and the second can be shaped with scissors to suit the cavity. Thin gutta-percha or paraffin-paper disks, as well as those of vulcanizable rubber may be thus used, and any are preferable to metal disks. When a cavity is filled wholly with cement, a rubber disk, pressed around with a ball burnisher, will carry the cement against the cavity-walls and leave it there; a plugger sometimes carries some cement out with it. An oiled mica matrix, because of its thinness, smoothness, flexibility, resistance to acids, shapibility with scissors, and cheapness, makes an excellent readily-applied and removed cavity-wall. It may be fastened around the tooth with gutta-percha, and if adjusted carefully, no subsequent finish will be required. As the mica matrix is very elastic and frail, care should be taken that it does not spring away from the tooth, and that no broken pieces are left between the teeth.—W. Storer How, D. D. S., in *Cosmos.*

TRANSMISSION OF CHOLERA BY THE HOUSE FLY—Craig (*Medical Record*) has made some careful experiments by feeding common house flies with a fresh boillon culture of the cholera sprillium. At the end of three days they seemed uninjured, and when the intestinal contents were removed, with every precaution to prevent contamination from the exterior of their bodies, the nature of which was confirmed by culture experiments and the obtaining of the red culture reaction by the addition of acids to beef-tea culture. If the common house fly is able, without injury to itself, to carry and transmit the cause of cholera, its agency in the extention of epidemics is probably important and may be difficult to combat.—*Philadelphia Polyclinic.*

VARNISHING CAVITIES.—The writer says that d the incompatibility of tooth-substance and the mater for filling teeth, it is best to interpose some substance the material and the dentine, and he recommends a cl such as damson, dissolved in chloroform. It acts a conductor of thermal changes, as well as an insulator electrical influences. It is not readily soluble in the fl the mouth. Being transparent, no discoloration is when used where enamel walls are thin; in fact, it pr discoloration of the tooth from oxidation when an oxid amalgam is used. It is helpful in starting large gold f holding the first cylinders firmly to the dentine, and less the danger of the fillings coming out. While it does n any means supply all the anchorage needed, the varnish away with the deep retaining pits.—W. G. Browne, in *Ite Interest.*

Cleaning the teeth should be the first work of the dent instead of the last. It will not only better reveal defects an enable us to do better work, but prevent the necessity of working in filth. Every particle of tartar should be removed an every tooth scrupulously polished. And such services shoul be paid for quite as liberally as any other work.—*Items o Interest.*

A BROKEN PLATE-HOLDER.—A good method for holding a broken rubber plate in position while it is being waxed up, is to take a round tin box four inches in diameter and two inches deep, with a perforated bottom. Fill this box nearly full of very fine shot. Place the pieces of broken plate in position as they should be, then press down into the shot, drop on the hot wax, and hold box under stream of water to cool. The water will run out through the perforations in the bottom. —*F. E. Buck, in Items of Interest.*

TREATMENT OF CHLOROFORM ASPHYXIA.—At a recent seance of the Paris Academy of Medicine, reported in the "Bulletin of the Academy" Labbe said that in apparent death from chloroform, he was firmly convinced that artificial respiration should be presevered in for a long time, and instanced many cases in support of this advice, particularly one in which he had kept up artificial respiration for twenty seven minutes and was finally rewarded with a remarkable success. Lately, however, he had used rythmical traction of the tongue, suggested by M. Laborde, in the case of a child who soon after the chloroform exhalation, became asphyxiated. Death seemed absolute, the pupils were dilated to the utmost. As soon, however, as he began the rythmatical traction of the tongue, the patient returned to life with marvelous rapidity; it was a genuine resurrection. He believes this method is preferable to artificial respiration, as it is easier and much quicker. Professor Verneuil said that for some time he had used only lingual traction alternating with flagellation of the epigastrum with a wet towel.—*Med. Review.*

COBALT AS A PULP DESTROYER.—Dr. C. N. Johnson, of Chicago, in a paper read before the New Jersey State Dental Society, and printed in the December *Cosmos*, advocates the use of Cobalt as a devitalizer of tooth pulps. It is his custom to allow the agent to remain sealed in the cavity one week. In the case of anterior teeth, he usually removes it in twenty-four hours for fear of discoloration, although he believes cobalt will be less likely to discolor a tooth than arsenious acid. The pulp should be well exposed to the action of the agent, and care should be taken in sealing the cavity, preferably with a cement. Dr. Johnson believes in absolute alcohol for dehydrating pulp canals, and considers dryness a *sine qua non* to successful treatment. He is opposed to over-treatment, believing that continued operative interference often results in irritation, which prolongs the disease. He believes in economy of time, both to patient and operator, consistent always with the most thorough work.—*Dominion Dental Journal.*

A CURIOUS case has just been recorded in which an electric current was found to be generated by a plate of artificial teeth. A patient consulted his doctor on account of a severe pain in his tongue. But the sufferer was assured that there was nothing the matter. He then paid a visit to his dentist, who informed him that his teeth were perfectly sound. Being, however, dissatisfied, he called on an electrician whom he knew, and asked him if it were possible that he could have any electricity in his mouth. On examining the teeth, his friend found that two metals were used to fit them to a composition plate. To these metals wire were then attached and connected to a galvanometer. Then the teeth were replaced in the patient's mouth, and the metals moistened with saliva. No sooner was this done than the galvanometer showed quite a large current from so small a source—enough, it is stated, to cause ulceration and severe pain when long continued on so sensitive an organ as the tongue. The plate was covered with an insulating varnish, and thence-forward all the trouble ceased.—*Literary Digest.*

INFECTED ROOT CANALS.—Dr. De Marion, of Paris, France, has treated a large number of infected root-canals by filling them with cotton saturated with a 33 per cent. solution of formal (essentially the same as formalin), hermetically sealed in, and in no instance as yet has there been any subsequent inflammatory action.—*Items of Interest.*

CORK WEDGES FOR SEPARATING TEETH.—Dr. Denham, of Santiago, states that the application of work for separating is less painful than any other material. It produces neither irritation nor inflammation, and patients can attend to the separating preparatory to a filling themselves. He cuts strips about three-eighths of an inch wide, and with a sharp pen-knife bevels one side to a thin edge, and from these he cuts pieces as required.

DR. GARRETT, of Newkirk, says of pyorrhœa alveolaris that it is disgraceful to hold that by removal of the causes a majority may not be cured. The very first thing to do is to thoroughly cleanse all the teeth at not less than two sittings, finding all the ulcerated points and making records of the same. Any doubtful or carious portion of the process should be removed, and cleansed with peroxide of hydrogen or three per cent. pyrozone, a weak solution of an essential oil such as cinnamon or cassia, to which may be added a few drops tincture iodine. In all these cases the patient has a great deal to do in the treatment and a wash such as listerine should be prescribed for use with the brush. In cases where no calculus exists around the necks, a solution decidedly alkaline, such as bicarbonate or biborale of soda, should be used as a wash. Weak teeth should be supported and in case of lameness cusps ground off to prevent jarring out of place.—*Dominion Dental Journal*.

IN resetting or remodeling a rubber plate, Dr. Davenport takes an impression of the mouth, saws away gums and centre of plate, leaving only sufficient rubber to hold teeth in line. This is placed on model and waxed up, tried in and finished in the usual way. In this way considerable time is saved.—*Dominion Dental Journal*.

DR. H. A. WALLACE, in a clinic before the Stomatological Club of California, demonstrated his plan of using Saddleback's bicuspids and molars in bridgework. The use of these teeth does away with much that is unsightly in the way of gold cusps in these teeth, besides making a stronger piece of work.

NEW ANÆSTHETIC MIXTURE.—Chloroform ten parts ether fifteen parts and menthol one part, used as a spray. recommended as an excellent and prompt means for obtaining local anæsthesia, lasting about five minutes.—*Medical age*.

ELECTROLYSIS IN ARRESTING EROSION.—It has occurred to me that the diseased glands (labial) can be removed or destroyed by electrolysis. The lips could be easily everted, and by employing a bent electrode, the orifice of the glands could be penetrated, and their decomposition brought about with a total cessation in the discharge of any secretion.—Dr. N. P. Brubaker, in *Pacific Druggist and Physician.*

TO DEODORIZE IODOFORM.—

R.—Carbolic acid	1 part.
Oil of peppermint	2 parts.
Iodoform	187 parts.

—"N. Y. Med. Journal.

SMOOTH MODELS.—After getting the impression in plaster, give it a coat of shellac, not too thin. After the varnish is perfectly dry, instead of oiling sprinkle powdered soapstone (or French chalk, so called) over the impression; then with a soft brush rub every part of it thoroughly, finally shaking out the surplus. Mix the plaster thin and pour, tapping the cup gently until the plaster commences to set.—*Ohio Journal.*

BLEACHING TEETH.—Saturate the dentine with strong sodium peroxide, followed by treatment with dilute hydrochloric acid to neutralize the alkali. Wash with hot water.—E. C. Kirk, in *Dominion Dental Journal.*

SPIRITS OF CAMPHOR.—A drop or two placed on the tongue will prevent the nausea in taking impressions.

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ARTICLE I.

THE PROFESSION AND OUR DENTAL COLLEGES.

BY DR. TRUMAN W. BROPHY, CHICAGO, ILL.

Read before the Illinois Society.

The dental colleges of the United States, by concert of action, have advanced the curriculum, so that it is today more systematic than in other professional schools.

The effort of the National Association of Dental Faculties to unify the course of study in the several institutions, while not entirely successful, has brought the colleges closer together in the methods of teaching, and the matter taught, than prevailed before the organization of that body.

The extension of the course of study over a period of three years has made it possible for students to bestow more time on the practical phases of anatomy, histology, bacteriology, chemistry, technology. etc., besides becoming more proficient in operative and prosthetic dentistry. The changing of the course, therefore, from two to three years has not only met with the approval of the profession, but has been equally gratifying to the faculties; so this relation of our colleges to the profession has been most happy.

"It will not be doubted by any one that it is our solemn duty in the conduct of dental education to see to it that before a student is permitted to enter on its study he has shown prompt aptitude and has already acquired certain fundamental knowledge. It avails nothing to point to the rare illustrious men who have leaped at a few bounds from the plowshare to the front rank of scientific or judicial eminence, and who have served immemorially as instances to support the fallacies of those who from selfish motives or from ignorant prejudice decry thorough education. Let not the rest of us, only ordinary sons of toil, be misled by the hope of such exceptional careers."

The relation of our colleges to the profession in regard to making our students more proficient practitioners scientifically, as well as practically, is one on which the colleges and the profession are interdependent. A practitioner may send to a college a student whose educational qualifications for admission are not of as *high* an order as they should be, and consequently his path to success is a most laborious one.

I cannot better express my ideas on the subject of preliminary education than to quote from Mr. I. Ernest Lane, Fellow of the Royal College of Surgeons, England, who, in an article on medical education and medical practice,* states that too much stress is laid on the benefits to be derived from what is termed a modern education, and suggests that a judicious admixture of the ancient with the modern would be of more benefit than an exclusive knowledge of either the one or the other. He points out that anatomical nomenclature, and in fact nearly all the technical terms met with in the study of medicine, are derived either from Latin or Greek, and that it is necessary to acquire at least an elementary knowledge of these languages in order to obtain an intelligent knowledge of their profession. As bearing on this subject, he quotes the words of a distinguished member of the profession, who had recently given it as his opinion that, "if a boy destined for a profession, were to be taught nothing but reading, writing and arithmetic till he was eleven, and after that nothing but Greek, Latin and mathematics till he was eighteen, at fifty that boy would turn out a more widely cultured, better read man than if in his early years he had been stuffed with geography, history, philosophy and the two-penny halp-penny fragments of chemistry, botany and zoology which constitute school science."

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*British Medical Journal, Oct. 7th, 1893.

If the views of Mr. Dane were presented to educators of large experience in medical and dental schools, I have no doubt that, after deliberate consideration, they would be heartily endorsed.

As we look over the directory of American dentists and place a mark opposite the names of those whose writings have made an indelible impression on our literature, and a profound impression on the dental mind, we note how few have enjoyed the great privilege of a university education. Had such opportunities been offered and embraced, however, the sphere of usefulness of these leaders in dentistry doubtless would have been materially enlarged.

On the other hand, a practitioner places a student in college whose affluent circumstances and broad preliminary education seem to especially fit him for his long course of professional study. His funds enable him to live comfortably. his education renders his professional study comparatively easy, but is there not another qualification essential to the success of a dentist?

It is my opinion that a course in a manual training school and a certificate of satisfactory work from teachers in such an institution, would be a very important stepping stone in entering the dental profession. Such a preliminary course prepares the student to engage in the manipulation of metals, the handling of fine instruments, and the manual dexterity essential to his success as a dental practitioner. A thorough knowledge of anatomy, chemistry, physiology, histology, materia medica and therapeutics, bacteriology, pathology and surgery, indispensible as it is in rendering a man qualified to practice dentistry, would very poorly indeed prepare him for the duties of his profession if he had not the manual dexterity to skillfully practice operative and prosthetic dentistry. My experience as a teacher—not extending over many years—has led me to the belief that all colleges should reserve the right to return to the student his fees and dismiss him whenever, in the judgment of the faculty, he cannot acquire the manipulative skill essential to enable him to practice dentistry successfully. To retain a student who by nature cannot acquire such skill and carry him on through a three years' course of study, and then reject him at the close of his final examinations, seems too unjust on the part of an institution to be excused.

Again, I think a student should never attempt any pursuit, unless he has a special desire to make it a life work or his vocation. I have no faith in the success of an individual who will take up the study of a profession just for a makeshift, or for what money he may possibly see in it. His work must be pursued with that interest that comes with a love for it, and he must be prompted by the desire to excel, not stand among the mediocrity of his profession, but with a determination to reach the topmast rung of the ladder of professional fame. Opportunity, it is true, may have a great deal to do with that, but a man's will power has a great deal more. A student who takes up the study of dentistry should be impressed by his preceptor with the fact that he has undertaken one of the most confining, laborious and enervating occupations known. It is only by force of habit that the busy dentist is able to get the outdoor exercise necessary to preserve his health.

The necessity of imparting practical instruction to students makes it necessary to have a well-equipped infirmary in every college, and patients on whom all of the operations in dentistry are to be performed. The question of how to supply students with patients has taxed the faculty of every dental college when first organized; and then the profession have in many instances criticized colleges for accepting patients who were not in a financial condition to warrant their applying to a college infirmary for operations. It seems that a matter of this kind should be so adjusted between the members of the profession and the colleges as to be quite satisfactory. It is true that dental college infirmaries often receive and perform operations for persons who are abundantly able to compensate a practitioner for his services, but the question of the patient's financial standing cannot be easily determined by college authorities. On the other hand, it is equally just to say that members of the profession extract many teeth which might be filled with cement or amalgam in a college infirmary for a fee which the patient might well afford to pay. Many such teeth are extracted because the patient would not be able to pay a fee for filling them that would compensate a dentist for his services. Therefore, it seems to me that poor patients, who have their teeth extracted for want of money to have them treated and filled should, instead of having them extracted, receive a certificate to a college infirmary, issued by the dentist, stating that this patient's circumstances are such that he should be admitted to an infirmary and receive such treatment as is necessary.

This brings us to the question of the relation of the profession to our dental colleges. The colleges must have patients, that they may teach practical dentistry. The colleges should not receive patients who are financially able to compensate dentists for their services. Members of the profession should not extract teeth which are susceptible of being treated and filled, on the ground that the financial condition of the patient will not permit them to spend the necessary time to treat them and put them in a healthy, satisfactory condition, but should, in all such cases, issue a card to such a patient and send him to a college infirmary, where such a card should admit him to treatment.

I believe not more than 20 per cent. of the population of the United States employ dentists for the purpose of treating and preserving their teeth. The remaining 80 per cent. do not engage the services of a dentist for any other purpose than for the extraction of teeth and the insertion of artificial ones. I do not make this statement from gathered statistics, but as an estimate made in a general way. Let us assume that there are 800 dentists in the city of Chicago, with a population, in all probability, of at least 2,000,000 of people, and each dentist treats and fills teeth for 500 people during a year. This would make 400,000, or 20 per cent. of the entire population of the city, the remaining 1,600,000, if this statement be correct, would employ dentists only for the extraction of teeth and making of plates. It seems unnecessary to state to this Society that the work devolving on us, and especially to the residents of Chicago, in educating this 1,600,000 people up to the value of the teeth and the advantages to be derived by preserving them, is a greater work than the most earnest educator has contemplated.

The mission of the dental college has long been supposed to be for the preparation of young men to engage in the practice of dentistry. Its teachings have elevated dentistry and placed it on a higher plane than it otherwise could have taken, but its usefulness is by no means limited to the preparation of students for dental practice. In my opinion its most important work is in educating the public to an appreciation of the great benefits which are bestowed on them by scientific and practical dentistry.

Many a young man is quite willing to assert that the nucleus of his practice was the patient whom he first met in a dental college infirmary.

The law governing the practice of dentistry in the State of Illinois has accomplished a great deal for the profession and for the public. The benefits that the profession have derived have been in a realization that men entering on practice in our State have been required to present credentials authorizing them to practice or take a State Board examination. It is true that our law has certain defects which should be amended; and in speaking on this subject I feel that it comes within the province of my paper, for it is the relation of the profession to the schools from which our ranks are augmented. I believe that the Illinois State Board of Dental Examiners has endeavored, from the time that the Board was first organized up to the present, to conscientiously discharge its duties. I am also aware that it is impossible for a body of men acting in that capacity to please every one, and what I shall say in regard to the relation of the Board to colleges and to the profession is not said in a spirit of fault-finding. It is not with a view of hurting the feelings of any one; but certain facts confront us, and it seems that steps should be taken to correct what is generally regarded as an error. The National Association of Dental Faculties, by increasing the course of college study from two to three years, did so that young men might become more proficient in dental knowledge. It seems, therefore, that the portals of the profession should not be entered by a shorter path. It has transpired on several occasions that permanent licenses have been issued by our State Board to young men who have had but a single course of study; and so their further study has been discontinued, and further proficiency has not been acquired. I do not believe it is the desire of the State Board of Dental Examiners to lower the standard of the profession by admitting to our ranks men who should pursue their studies further and complete their professional education. The relation which the profession should bear to colleges should be to aid them by counsel and friendly intercourse in the discharge of their momentous duty, and send to them only such young men as are qualified by nature and by education to intelligently pursue the study of dentistry. The practitioner's further duty is to support the infirmary, as far as can be, by sending patients to it who are unable to satisfactorily compensate him for his services, so that students may have an opportunity to acquire practical knowledge and that "delicacy of manipulation which comes only with experience."

Another suggestion I might make to the profession is to visit the dental colleges more frequently, and by their presence stimulate the students to make their very best efforts.

The duty of the colleges to the profession should be to guard their entrances and their exits; admit only such young men as possess a good education; watch them carefully; advance them practically and scientifically; and in the event of their failure to become skilled in the operating room and laboratories, they should reserve the right to return them their fees *pro rata*, and advise them to engage in some other vocation.

Another duty of the colleges to the profession should be to require certificates from persons whose financial ability to compensate a dentist for his services is at all questionable, and on such certificates admit them to the privileges of the college infirmary.

So, then, let the State Board of Dental Examiners, the National Association of Dental Faculties, the profession and the colleges, labor unitedly to advance our profession, so that our unprecedented achievements during the quarter of a century just closed may be rendered incomparable with those yet to come.—*Items of Interest.*

ARTICLE II.

MALIGNANT TUMORS OF THE MOUTH.

During the operation a portion of the root was broken off and allowed to remain. From this time the parts were sensitive and easily irritated, and a few weeks later a small tumor developed which was probably cystic or soon became so, for, he says, it was opened many times by phy icians and dentists, always discharging a thin water-like luid, but never discharging any pus.

Six years ago it began to increase in size, but made slow progress till about two months ago, when a change came on rapidly, and at the time he entered the University Hospital, March 14th, 1895, the growth had extended forward on the lower jaw, nearly to the median line, backward to the angle and well up the ramus, pushing the tissues of the cheek prominently outward. There was an opening in the central portion of the tumor, from which flowed a thin offensive fluid; the patient stated that some small pieces of bone had been discharged through the opening, but no trace had been discovered of the offending root. All the molar teeth on that side have recently been extracted, and their place is now occupied by the growth.

A probe inserted in the opening revealed the fact that some fragments of bone still remained, which would undoubtedly come away soon if the tumor is allowed to pursue its course unmolested.

Excepting these, a large portion of the bone seems to be destroyed or displaced by the growth,

Excision of the right half of the lower jaw, together with the outlying parts of the growth, offered the best chance for a cure, and the patient promptly selected this course.

The operation did not present any unusual points of difficulty, except that the bone was easily broken at the point of disease, making it much more difficult to remove the ramus.

Recovery has promptly taken place, and at this time he is well. In this case is found, what was at first a very simple tumor, a dentigerous cyst or epulic growth, after many years of irritation changing to a sarcoma. The dread which the physician, dentist or patient may have of operation, or their faith in medical measures, probably were responsible for the delay which had allowed this change to take place. This case is an earnest appeal to early and complete removal of all tumors of the mouth except in those cases where the growth is not irritated, remains stationary, and can be frequently seen by the surgeon or dentist in charge, and operation advised, when the slightest change for the worse takes place.

Sarcomatous tumors of the jaw may be removed with a reasonable hope of cure when the growth is central (myeloid sarcoma), if the entire bone to which the disease is confined be removed. Periosteal sarcoma does not promise such good results, because the surrounding tissue may be involved, but these tumors come early in life when the patient is vigorous and will rapidly recover from operations. In all tumors of this class, not only the jaw should be removed to the median line, but the entire periosteum and attachments of muscles must also be taken away, if we operate with any expectation of a cure. Another tumor of the mouth, remarkable because of its slow growth and change, occured in a patient who entered the University Hospital in June, 1894, during my term of service in the clinic.

Mrs. D., sixty-six years old, was for many years troubled with catarrh. Twelve years ago she first noticed a growth in the hard palate to the left of the median line. She was wearing a plate at the time and believed that it may have irritated the mouth and thus caused a tumor to develop, at least the irritation was soon so great that she could not wear it.

The tumor probably began in the hard palate or the floor of the left antrum; was a very slow growth till a few months since, when it began to rapidly increase in size. It involved all the border of the left maxilla, nearly all of the hard palate and much of the soft palate. The left antrum and the nasal passages were filled by the extension of the growth upward. It projected so far downward that the mouth could scarcely be closed. An exploring needle passed in the tumor did not come in contact with the bone where the border of the maxilla and the hard palate should be found. A portion of the tumor was excised for microscopical examination and the pathologist reported carcinoma.

The malignant nature of the tumor and its certain fatal result if allowed to remain, together with the danger of a return of the disease if the tumor was removed, were all explained to the patient. She expressed a strong desire to have the operation made, and it was done, Professor. Nancrede kindly assisting me. Tracheotomy was first performed, and the larynx packed with a sponge, that we might continue the anæsthetic and the operation at the same time, without having blood enter the trachea, as it certainly would with the severe hemorrhage we must encounter unless such means were taken to prevent it. An incision was carried from the middle of the lip upward to the left of the nose and under the left eye, the flap was then reflected to give sufficient room for cutting the bone. The alveolar portion was first divided in the median line, then the molar and nasal portions, after which the diseased part was torn from its resting place by the lion forceps. The alveolar border was cut away at least one inch to the right of the median line, and all the surface from which the growth was removed was scraped with a curette to remove any small particles of diseased tissue that might be remaining. Hemorrhage was stopped by means of the Paquelin cautery, and the cavity was packed for forty eight hours with iodoform gauze.

The patient made a good recovery, and returned to her home in a few weeks, free from pain and relieved of the presence of such a tumor. When last heard from she was entirely well. The disease in this case may return, but not for some months. During this time she will be free from pain, and death may result from some other disease.

Here is another case illustrating the proper method of operating for carcenoma when the surgeon sees his case early.

Mr. W. H., farmer, has been a moderate drinker, enjoying good health. Three weeks ago he first noticed a small growth on the under surface of the right side of his tongue; it was closely connected with the surrounding tissue, growing rapidly and painlessly. A small portion was excised under cocain anæsthesia, and submitted to microscopical examination. October 17th, 1894, he was operated on in professor Nancrede's clinic, one half of the tongue being removed well back to the base. Rather a heroic operation for a small growth of three weeks' duration you may say, but here is the pathologist's report: "*I* have made sections of the growth from the tongue already reported as epithelioma, and as far as I can see you have gone well outside of the disease." This extensive operation was the only hope of cure for this man, even then the lymphatic glands may have been involved, and the return of the disease may be noted at that point, while the scar surface remains healthy. Cancer appearing in the mouth can scarcely be mistaken for any other growth, and there is never any difficulty in removing a portion to confirm the diagnosis, then prompt and thorough removal is the only chance for cure. When any lymphatics are found *to be* suspiciously enlarged, they must also be removed at the same time.

Mechanical devices to take the place of parts removed or to correct deformities following operations for malignant disease should not be applied for some time after complete recovery, because of the danger that such irritation might renew the disease. When the cicatrices are well formed or the diseased condition is not malignant nor beyond the bone, this point may be disregarded and the deformity corrected. The use of medicine in the treatment of malignant tumors is not to be considered where operation is possible but may be tried as a last resort. Coley, of New York, has recently reported thirty-five cases treated by injecting the combined toxines of erysipelas and the bacillus prodigiosus. In five of these cases he has reasonable hope of a permanent cure. All of his cases were inoperable and the diagnosis was verified microscopically. The investigations being carried on at the present time concerning the causes and treatment of these tumors certainly promise great results.

While we wait for these promises to become truths, let early and complete operation be the leading treatment of all tumors of the mouth, then few of our patients can say:

> "Oh, that comfort comes too late,
> 'Tis like a pardon after execution,
> That gentle physic given in time had cured me
> But now I am past all comfort here but prayers."

Dental Register.

ARTICLE III.

DISEASE OF THE ANTRUM OF HIGHMORE FROM A MEDICAL STANDPOINT.

SYMPTOMS, SIGNS AND DIAGNOSIS.

In most cases I believe the trouble has been latent for a long time before they call in the physician or on the dentist for assistance. Persons may have the trouble for years before it announces itself. Jeanty, in reporting 22 cases of latent empyema, states that they were slow, insidious; there existed neither pain nor swelling in the affected cheek, and the sole manifestation of the disease was nasal secretion of continued or intermittent character, fetid or without odor of pus. The health of the patient becomes impaired if the disease has been of any great duration. They suffer from a mild degree of septicemia, from the absorption of pus. The classical symptoms are, as a rule, not present together —such as distension of the antrum, swelling of the cheek, infra-orbital pain, escape of pus, lying on the sound side.

It is only during the epidemic of influenza for the last two or three years that I can find any clear reports of acute attacks of antrum troubles. It is by studying these cases that we can prepare ourselves to make an early diagnosis of this class of troubles. I believe many cases occur that do not report to physicians, or, if they do, are not diagnosed. Felix Semon, the eminent laryngologist, reports† an acute case of his own antrum, caused by influenza. There was considerable coryza, a watery discharge from both nostrils, followed by a sensation of fullness in the left cheek, increasing to a sense of intolerable distension of the of the zygomatic region. The skin over the part became distinctly swollen and reddened and tender to the touch; temperature, 100.5. There was no frontal neuralgia. After these symptoms had lasted twenty-four hours, a violent blowing of the nose brought away an ounce of turbid greenish purulent fluid, followed by more of the same on lowering the head, inclined to the right. A few hours after this more of the same fluid escaped; later on a third escape took place. The acute complication now subsided, though two days later another discharge of greenish fluid of a mucoid character took place, which signalized the end of the affection. The points worthy of attention are: (1) The sudden and violent increase in pain during sneezing or coughing; (2) the limitation of pain to the affected region, and finally the tendency of influenza to single out the locality of its sequelle in different individuals. In Semon's case the sequelle observed occurred in the domain of the fifth nerve. Lennox-Brown and Moxham report acute cases with practically the same symptoms.

Wolfenstein, of Cleveland,* reports a case of acute empyema of the antrum of Highmore as follows: "The patient states that he caught a severe cold in his head two weeks ago, which ran an ordinary course till within the past three days, when he noticed soreness of the teeth, in in the cheek of the left side; at the same time there as also a profuse discharge of pus from the left side of e nose; a feeling of soreness on this side of the nose lso. The pain on the left side of the face is considerable, specially at night."

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†*British Medical Journal*, February, 24th, 1894.

**New York Medical Journal*, August 5th, 1893.

Kreig, in his account of acute causes, speaks of the great pain suddenly coming in the upper jaw, followed by swelling of the skin and a feeling of a weight in the antrum. Perforation gave great relief and a speedy cure. There were two relapses.

There is, in some cases, great pain in the upper jaw; the teeth seem to be long or pushed down out of their sockets, as it were. The pain shoots up in the ear, and at times takes on the nature of supraorbital neuralgia. The supraorbital pain is far more frequent than the infraorbital. The patients complain of a nasty odor, that is quite evident to themselves, but is not noticed by any one else; this odor is not constant, but in most cases can be observed by the patient drawing the mucus down and back in the posterior nares; this is caused by their drawing the odor out of the antrum during this action. In some cases the odor can only be noticed in the morning, and by others in the evening. This depends, I think, on the size and position of the opening in the antrum. Pus can be found, in most of the cases, coming out from behind the front of the middle turbinated bone. The flow of pus can be increased, in many cases, by holding the diseased side uppermost and the head forward and downward. The pus at the anterior end of the middle turbinated bone pulsates at times.

Zeim, in 1888, showed that blennerhea of the nose rarely occurs without disease of accessory cavities, and pointed out and proved that where this symptom occurs it is usually due to empyema of the antrum. We have headache, complained of mostly in the frontal region, though in one case it was occipital and passed away after the operation. The opening in the antrum from the nose will, in most cases, be covered by polyps, or there will be either polypoid degeneration of the mucus membrane of the middle turbinated bone or hypertrophy of the same. Denuded bone about the opening can very often be felt with a probe.

McBride calls attention to marked redness of the gum on the diseased side; this sign I have not met with. Pain on percussion will be found, in many cases, on the affected side, and when the teeth are struck. There is likely to be a feeling of increased fullness and distension, with an increase of pain on the affected side, headache and sickness of the stomach toward evening. This is caused by the position of the patient during the day being erect, which does not allow a discharge of pus to take place, the the antrum filling up full. Most of these cases are those, I think, where there is rather free drainage in the nose, and the symptoms or the trouble seems to be periodical. A case of this kind, now on hand, came to me for eye trouble, complained of neuralgia;, pain worse in the evening; fullness, not pronounced, on right side of face; severe headache; pain over the eye; pain so great at times as to cause sick headache and vomiting. After close questioning, patient admitted a nasty odor, noticed by herself only; pus free in the morning, less so at night, when the pain comes on; an abscess of a cuspid some four years ago; is wearing a rubber plate. Has a polypoid degeneration of the middle turbinated bone in the nose; pus flows from behind the bone, which is pushed firmly over to the septum.

Berger calls attention to the frequent occurrence of polyps and hypertrophy, which closes the opening of the sinus; the secreted liquid is retained in the cavity, where it serves for development of all kinds of bacteria, and particularly those which produce the mixture of trimethylamine, and dimethylamine, which one meets with in old red herring sauce, and the odor of which is identical with empyema.

One of the means for diagnosis is the electric lamp in mouth. In the healthy subject the pupil has a red reflex, and there is a bright, almond-shaped space under the eye. If these two are dark, there is a decided probability that there is trouble in the antrum. If with the dark pupil and dark space under the eye we have pain above the eye, or the whole side of the head is painful, and pus in the nose, we need not hesitate to make a diagnosis of pus in the antrum. The fact must not be overlooked that very often antrum troubles do not happen alone; they are, in most cases, associated with suppuration in the ethmoidal and sphenoidal cells and frontal sinus. This condition must be thoroughly treated at the same time as that of the antrum. Some have claimed that there is a resistance to the finger on percussion—almost dullness over the affected cheek; I have tried for this, but have not convinced myself of its correctness. Then, if we have a case with pus coming from one side of the nose, an odor that is only noticeable to the person himself, and this not at all times; the electric illumination, showing a dark space under the eye. With these three—or even with any two of them—we can safely make the diagnosis of pus in the antrum. If we are in doubt, the use of hydrogen dioxide (a few drops thrown up behind the middle turbinated bone and in the antrum) will, in most cases, decide the question. If pus is in the antrum, there will be felt a commotion, and the foaming caused by the decomposition of pus will be plainly seen under the middle turbinated bone. A small trocar and cannula can, for diagnosis, be thrust in the antrum, either through the canine fosse or through the external wall of the nose, under the inferior turbinated bone. The treatment of empyema of the antrum would seem to be simple and easy. We have a cavity filled with pus; all that needs to be done is to give it good drainage, keep it clean, and it will get well itself. This is simple in theory, but in practice does not seem to work. If we could see the cases soon after their commencement, the theoretical treatment would be successful; but we do not see the cases in this stage. It is only long after the beginning that we see them; then we [illegible] After the antrum [illegible] kept clean. [illegible] the cases the [illegible] such as polyps in the nose [illegible] the ethmoidal [illegible]. These cases just mentioned [illegible] are the cause of most [illegible]. This subject was discussed [illegible] December, 1894, and the majority were [illegible]. If there is a diseased tooth or necrosed area [illegible] process, these are the cases that dentists encounter; [illegible] must be removed. I hope when you, my dental friends here, do this, your cases may all do as well as one of your confreres says his cases do; that is, after removing the tooth and diseased bone, washing out thoroughly, they get well in two or three treatments.

The dentists, as a rule, and a great number of rhinologists, open in the cavity through the socket of an extracted tooth; this is a good way in a number of cases, especial-

re is no complication. If the case has been of any
there is likely to be polyps in the antrum or poly-
generation of the mucous membrane. If this hap-
e condition must be removed by vigorous curetting
ping of the cavity. We may have the mucous
ane of the cavity in folds. There may be bony sep-
rowing in the antrum, the result of the inflammation,
s stated in the pathology. These must be broken
The opening as described can be enlarged or an
ng can be made through the cunine fosse. One thing
favors recovery is the fact that in pathological cases
pening in the nose is much larger than in normal cases.
trouble has been treated and cured by the injection of
s through the opening in the antrum, through the in-
r turbinated bone. A small trocar and canula, slightly
t, may be used, putting the point of the instrument well
he nose and beyond where the lachrymal duct enters
nose, and pushed in, out and upward, till it is felt to
ve entered a cavity. The trocar is withdrawn, and the
vity washed out. Kuster, of Berlin, advocates about the
me way of operating. The nose is first put under the in-
uence of cocain. Some operators open both through the
ferior meatus and between the bicuspid and molar teeth;
y this means they can easily wash out the antrum. The
method by which the operation is done will depend on who discovers it—physician or dentist. I believe, though, there will in the future be fewer openings through the alveolar process, because we are discovering the trouble every day nearer its beginning. A number of men treat the cavity by the dry method. The cavity is cleaned by irrigating it well, drying it thoroughly by blowing in air, then iodoform, iodol or any antiseptic powder. Some brilliant successes have been had from this treatment. Packing the cavity after curetting with either bichloride or iodoform gauze is often done. But, whatever plan of treatment is decided on it must be thorough. The cavity must be made clean and kept clean. We have a good helper in cleansing in hydro-

gen dioxid or pyrozone. I would like to call attention to one little point in washing out the cavity—that is, do not use much force. Use a fountain syringe with plenty of fluid and do not have it raised very high above the head, and when the water is running in the antrum put the head in different positions, so that the fluid may reach all parts of the cavity. As to the instrument to open the cavity, there is nothing equal to the dental engine, but physicians and surgeons do not need to go to this expense. Any good bone drill will do the work; even a gimlet has been used. To keep the openings open various expedients have been used, the least irritating are either soft or hard rubber tubes made for this purpose. I have good results from gold tubes.

Although it is in the last few years that we have made the greatest advances in our knowledge of this condition, we are not very far in advance of the celebrated surgeon John Hunter in operating. He, over one hundred and twenty-five years ago, speaks of it in terms that would do to follow to-day. He says the first part of the cure, as well as that of all other abscesses, is to make an opening, not in the part where it threatens to point, for that would generally be through the skin of the cheek. If the disease is known early, before it has caused destruction of the fore-part of the bone, there are two ways of opening the abscess—one by perforating the partition between the antrum and the nose, which may be done, and the other by drawing the first or second grinder of that side and perforating the partition between the root of the alveolar process and the antrum, so that the matter may be discharged for the future by that way.—*Pacific Coast Dentist.*

ARTICLE IV.

FRACTURE OF THE SUPERIOR MAXILLA.

BY W. D. M. MASON, FORT WORTH.

Read at Houston, May, 1895.

May the 9th, 1894, Mrs. B., a comely widow of 38 summers, came to me with the following story, viz:

"Last night during a thunder and rain storm, while out in the back yard rounding up my children preparatory to putting them to bed, I was so blinded and shocked by the constant flashes of lightening, and before realizing what was going on was thrown violently to the ground. My protracted absence caused sister much uneasiness, and on going out in search of me, was horrified and frightened at finding me stretched out on the ground in the rain. With the assistance of our children I was carried into the house. The whole atmosphere was heavily charged with electricity, and the last thing I remembered everything was whirling around like a merry-go-around. In falling my mouth must have struck a scraper used in railroad building, completely knocking out one of my upper front teeth, which was picked up next morning near the scraper."

Upon examination, I found Mrs. B.'s story to be true as to the tooth being out; also fracture of the superior maxilla. She had the right central incisor in her hand bag, while the left one was merely hanging in the mouth. Resetting the bone and teeth, after thorough preparation, I wired from cuspid to cuspid with small copper wire, drawing the lingual and labial wire together between each tooth, making them immovable. Of course, Mr. President and members of the Texas Dental Association, it is unnecessary to go into details as to further treatment; suffice it to say that a thorough antiseptic treatment was kept up for four weeks, not a drop of pus forming. Removing the

wires, I was gratified at the result of the job, perfect
having taken place. I might add that, during the
time the wires were worn the patient suffered little
pain or inconvenience, except the first few days, when
was considerable nausea. The occlusion is as perfe
before the accident, and but for the loss of a few piec
alocali, the teeth are as firm as if nothing had happ
I see the patient frequently and am glad to state that
uses them with impunity, even to the biting of threads
am at a loss, Mr. President, to account for Mrs.
shock, for I remember very distinctly there was no so
of anything being struck by lightening at the hour
narrated, though the whole elements seemed to be a p
fect spider web of lightning. I somehow doubted h
veracity and began "joshing" her about attending an "I
wake," when she reiterated it with even more emphasis.—
Texas Dental Jonrnal.

ARTICLE V.

OCCLUSION AND MASTICATION.

DR W. H. H. BARKER, HURON, SOUTH DAKOTA.

In occlusion every tooth except the lower central incisor and the third molar impinges or rests its occluding surface on at least two of its fellows in the apposing arch, and each in its own arch, except the third molar, impinges on its mesial and distal surfaces with the same number of of its fellows in its own arch.

On these two facts are based many laws which should never be ignored in any operation in the oral cavity, so far at least as the teeth are concerned.

One of these laws, and the one that perhaps is the least considered, is that of facial expression. There cannot be a perfect face where there is a malocclusion. No part of the face is so subject to change as that bounded by the maxillaries. Infancy, youth and old age proclaim these truths.

Often malocclusion prevents clear, distinct and perfect articulation, and allows a disarrangement of the whole apparatus. Elongation, or protrusion are marked features, and most seriously interferes with the free movements of the lips and tongue, and these in turn interfere with enunciation to such an extent that in many cases the voice is marred beyond recognition and almost beyond redemption This is a feature that calls loudly for remedy at the hands of the dental surgeon, and should be much less ignored than it now often is.

It is a physiological law that the full development of an organ and its maintenance in a normal healthy condition is dependant on its use. Nature allows no drones, physiologically, and hence the work is designed for an organ must be performed by it, or it suffers in consequence.

The dental organs are no exception to the rule. They are made for work, and hard work of the most severe and constant kind. That this work may be done rightly, and to its full extent, there must be no break in either arch, and occlusion must be perfect and complete. Malocclusion does not allow of either normality or healthfulness in the teeth, either as a unit, or as an aggregation; work is their like, and antagonism their salvation. In malocclusion, both, to some extent, are wanting, their office abrogated, and they must pay the penalty. Disease readily attacks a single member, or the whole of that arch, if not put to service, and the role of nature, is to expunge what is of no service. Among the many causes of malocclusion may be noted irregularity, a most fruitful source, happily in a large number of cases remedial. It is seen in its worst form in a crowded condition, and is the result of a want of correspondence in the size of the teeth and jaws. Then comes the lack of the proper number, and results usually from loss of caries or extraction after the organ has developed and taken its place in the arch. Next, the wasting of the gums and alveolar processes from mercurial salivation, pyorrhœa alveolaris, the impingement of salivary and sanguinary calculus; and other diseases, causing the teeth to change their positions; and to assume new ones.—*Dental Review.*

ARTICLE VI.

THE TINCTURE OF THE CHIORIDE OF IRON.

BY G. S. MARTIN, L. D. S., D. D. S., TORONTO JUNCTION, ONT.

Read before the Toronto Dental Society.

Were the subject of my paper tonight "Iron," I would perhaps be inclined to write an essay dealing with the therapeutics of the iron preparations, internally as a tonic and externally as a styptic and astringent. I might recall to your mind that iron constitutes a necessary integral part of the red blood corpuscle, and may thus be said to be a food rather than a medicine. I might speak of its use in the treatment of such conditions as anæmia, and neuralgia resulting from anæmia, or of its great value as an aid to the appetite and digestion. But finding myself confined to one of the many preparations of iron—one for which the dentist has little or no use in his office practice—I am convinced that your committee had not in view a dissertation, however learned, on iron and its value as a styptic tonic.

In what way are we as dentists so interested in the tincture of the chloride of iron as to spend an evening in a discussion of it? Not as a styptic, I am sure, as for this purpose we have in the solution of the subsulphate (known as Monsel's) a much more efficient remedy As a tonic I find on enquiry among physicians and druggists of my acquaintance, that the tincture of the chloride is the most used of all the iron remedies, it being one of the most efficient and active preparations, and having the additional cardinal virtue of being the cheapest. The works on therapeutics tell us that the objections to its use are its constipating effects and its corrosive action on the teeth. It is to this corrosive action that I wish specially to direct your attention to-night.

In order to a thorough understanding of the question let us ask, What is tincture of the chloride of iron? First, in brief, its source: Iron wire is heated with H. Ci. and the ferrous chloride thus formed ($Fe. Cl._2$) is converted by further heating with H.Cl. and $H. NO._3$ into ferric chloride ($Fe._2 Cl._6$). This ferric chloride diluted with three volumes of rectified spirits gives the tinctura ferri perchloride of the B. P. In physical properties it is a bright yellow or reddish liquid with a strong odor of ether, very strongly astringent and corrosive in its effects and having an acid reaction.

This is the preparation whose effects as witnessed at the dental chair we wish to discuss to-night. I doubt if there is any one who will deny that this preparation has this corrosive effect, but if there are any such a simple experiment will, I think, serve to convince them. A sound tooth placed for a few hours in a solution of one drachm of tincture to one ounce of water will be found on examination so affected that the enamel may be readily scraped away.

In a practice dating back only a comparatively short time I have many times already heard the words, "Oh dear, I had such good teeth until I began taking iron." I have no doubt those of you who have been in practice some years can recall instances where, after you have put a patient's teeth in a splendid condition, they return to you after an absence of a few months, and to your surprise exhibit the ravages of extensive decay. On enquiry you have found that the patient has been using a medicine containing tincture of iron. Some years ago Dr. Smith, of Edinburgh, Scotland, conducted a series of experiments from which he concluded that of all the salts of iron the mos corrosive were the tincture of the chloride, and the sulphate. The authorities, so far as I could find, throw ver little light on the nature of the chemical action that takes place any more than to say that it is undoubtedly due t the action of the free acid present. Attfield, in his "Pharmaceutical Chemistry," says that it is practically impossible to obtain a preparation of ferric chloride free from an excess of H. Cl. It is noticed on experimenting on teeth in the test tube that the first appearance of change is a white spot, which rapidly extends over the whole surface of the tooth. This would indicate disintegration due to a mineral acid.

Admitting, then, this disastrous effect on the tooth, we come to the question: What is our duty as *dentists?* This question is one needing to be handled with great delicacy, involving as it does that other much-vexed question, the relations existing between the physician and the dentist and it is with some timidity that I approach it. The conscientious dentist will not be content only to repair damage done, but will strive by every means in his power to prevent the occurrence or recurrence of any further damage. If he felt that the use of vulcanite or amalgam would seriously endanger the health of his patient by producing a species of blood poisoning, he would abandon the use of these articles, though they might seem indispensable to the practice of dentistry. The conscientious physician, judging from the same professional and humanitarian standpoint, will be careful that in treating one condition he does not seriously affect some other organ or part of the system of his patient.

All the works on materia medica and therapeutics that I have been able to consult in preparing this paper, very distinctly say that this preparation of iron is specially injurious to the teeth, and should be used with great caution, so that if physicians are guided by recognized standards of medical practice they will not neglect, when they prescribe t, to give the patient such directions as will enable him to ntelligently guard against evil results. From enquiries nade and from my own observations, I am led to believe that there is a lamentably large class of physicians who, judged by these standards, are not conscientious in their treatment of patients. Druggists with whom I have conversed inform me that a large percentage of "iron prescriptions" contain no caution whatever as to taking. During the past month I found two patients of mine taking an iron preparation prescribed, and in at least one case dispensed by a physician. No directions had been given and the patients did not know that any bad results might follow.

Even when physicians do their duty in this matter it is doubtful very often if the result is satisfactory. Let us look at some of the means employed. The medicine is prescribed in a very dilute form, in the hope that thus the injurious effects will be avoided. The experiments of Dr. Giblin, of Boston (to whose paper [International '92] before the Harvard Odontological I am deeply indebted), go to show that to dilute the tincture of iron with water is to increase its injurious effects. A tooth immersed in a strong solution will become incased in a hard coating of oxide, which will at once act as a protection from free acid, while the oxide formed on a tooth immersed in a weak solution is flocculent and non-protective. Even when patients are instructed by their physician to use a tube I question if many of them will exercise sufficient care to make it of much use, as the tube must be carried well back in the teeth to insure success.

That there is an increasing interest being taken in this important subject is evident from the number of proprietary preparations advertised in our drug journals, each claiming to have preserved all the promptness and efficiency of the tincture and at the same time to have eliminated all the dangerous effects. I fancy the price of these preparations will be an effectual barrier to their general use. The use of alkaline gargles before and after taking the medicine seems to commend itself to me as the best way of counteracting the bad effects. It certainly is not for us as dentists to say to physicians what remedies they shall use, as we cannot be expected to trace through the whole system the action of a particular drug: but when the results of their treatment so seriously mar our work, and if by care these results might be avoided, then we are surely at liberty to criticise this want of care and to tell the physicians of our patients how, in our opinion, these results might be avoided.—*Dominion Dental Journal.*

ARTICLE VII.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

Courtesy "Dental Cosmos."

The Twelfth Annual Meeting of the National Association of Dental Faculties was held at the Ocean Hotel, Asbury Park, N. J., commencing Saturday, August 2, 1895; the president, Dr. Frank Abbott, in the chair. The entire membership of the association was represented at this meeting as follows:

University of California, Dental Department—L. L. Dunbar.

University of Denver, Dental Department—R. B. Weiser.

Columbian University, Dental Department—J. Hall Lewis.

National University, Dental Department—J. Roland Walton.

Southern Medical College, Dental Department—Frank Holland.

American College of Dental Surgery—Louis Ottofy.

Chicago College of Dental Surgery—Truman W. Brophy.

Northwestern College of Dental Surgery—J. A. Whipple.

Northwestern University Dental School—George H. Cushing.

Indiana Dental College—George Edwin Hunt.

University of Iowa, Dental Department—A. O. Hunt.

Louisville College of Dentistry—Francis Peabody.

Baltimore College of Dental Surgery—M. W. Foster.

University of Maryland, Dental Department—F. J. S. Gorgas.

Boston Dental College—J. A. Follett.

Harvard University, Dental Department—Thomas Fillebrown.

Dental College of the University of Michigan.—J. Taft.

Detroit College of Medicine, Dental Department—G. S. Shattuck.

University of Minnesota, College of Dentistry—Thomas E. Weeks.

Kansas City Dental College—J. D. Patterson.

Western Dental College—D. J. McMillen.

Missouri Dental College—A. H. Fuller.

University of Buffalo, Dental Department—W. C. Barrett.

New York College of Dentistry—Frank Abbott.

Ohio College of Dental Surgery—H. A. Smith.

Western Reserve University, Dental Department—H. L. Ambler.

Pennsylvania College of Dental Surgery—C. N. Peirce.

Philadelphia Dental College—S. H. Guilford.

University of Pennsylvania, Dental Department—James Truman.

Meharry Medical School of Central Tennessee College, Dental Department—G. W. Hubbard.

University of Tennessee, Dental Department—J. P. Gray.

Vanderbilt University, Dental Department—Henry W. Morgan.

Royal College of Dental Surgeons of Ontario—J. B. Willmott.

The following colleges were admitted to membership

University College of Medicine, Dental Department, Richmond, Virginia—L. M. Cowardin.

Atlanta Dental College—Wm. Crenshaw.

Birmingham Dental College—T. M. Allen.

Cincinnati College of Dental Surgery—G. S. Junkerman.

Cleveland University of Medicine and Surgery, Dental Department—S. B. Dewey.

The following, laid over under the rules from last year, were adopted as here given:

Resolved, That in view of the recommendation of the Executive Committee that this Association now in session shall require that all colleges, members of this Association, shall extend the term of the session of 1896-97, and of succeeding sessions, to not less than six months each.

Beginning with the session of 1895-96, no college shall be permitted to retain membership in this Association if it is conducted or managed, in whole or in part, by any person or persons who do not practice dentistry in accordance with well recognized and generally accepted forms, generally known as dental ethics, or if they are owned in whole or in part by men or women who are engaged in disreputable dental practice, or if any college have upon its list of trustees, the faculty, demonstrators, or in any other capacity, any one who does not practice dentistry in accordance with the principles above mentioned. This shall refer to dentists only.

Beginning with the session of 1896-7 the examinations conducted by the colleges of this Association shall be in the English language only.

The other resolutions which came over from last year for action were laid on the table.

A resolution was adopted requiring each college holding membership in the Association to file with the secretary, sixty days before the next meeting, a detailed statement of its equipment and facilities for teaching; all new applicants to file a similar statement with their applications. The secretary was instructed to have blank forms printed for the purpose and forwarded to the various schools.

The report of the special committee on preliminary examinations was received and the committee discharged.

The following resolutions offered by Dr. Patterson were adopted:

Resolved, That students in attendance at colleges of this Association are required to obey the laws regulating the practice of dentistry in the various States, and failing to do this, shall not again be received into any of the colleges of this Association.

Resolved, That when a college of this Association has increased the cost of tuition fees, no student shall be received at the former fee except those who have matriculated at such college prior to such action.

The Committee on Text-books reported in favor of the adoption as text-books by the colleges of the Association of two works, namely: "Dental Anatomy," by G. V. Black, M. D., D. D. S., and "Methods of Filling Teeth," by Rodrigues Ottolengui, M. D. S. The report was adopted.

The following lie over until next year:

Amendment to the rules offered by the Executive Committee:

That each college be allowed two delegates, and be limited to one vote for each school.

By Dr. Peabody:

That when a student who has matriculated within the time limit in any recognized college shall, from sickness, death or sickness in family, lack of funds, or other reasonable cause, be compelled to retire from that college before the expiration of the term, he may be allowed to make up the deficit of time in the same or any other college (provided he enter at a date not later than that which he retired), be examined by the last college enter and if the examination be up to the requirements of th college, and otherwise satisfactory, may be given ticke for advanced standing or graduated, as the case may b

By Dr. George Edwin Hunt:

Amend the last portion of Rule 3 to read as follow

"Except on such conditions as would have been imposed in the original school, and these to be ascertaine by conference with the school from whence he came."

By Dr. Gray:

Moved that when students from one college apply for advanced standing to any other college of this Association it shall be the duty of the Dean or Secretary of the latter college to ascertain by correspondence with the college from which the student comes if there be any objection to his acception.

By Dr. Gray:

Resolved, That all colleges of this Association shall charge not less than one hundred dollars tuition each session.

By Dr. A. O. Hunt:

Resolved, That a student who is suspended or expelled from any college of this Association shall not be received by any other college during that current session.

In case the action of the first college is expulsion the student shall not be given credit at any time for the course from which he was expelled.

Any college suspending any student shall at once notify all other members of this Association of its action.

The following resolution offered by Dr. Ottofy was adopted:

Resolved. That the endorsement of applications for membership, made during the coming year, shall be based upon definite knowledge obtained by a careful examination of the methods of teaching, the equipment, and the efficiency of the faculty.

The report of the Committee on Revision of the Constitution, Laws and Codified Rules was considered section by section, and laid over for final action next year; and the committee, consisting of Drs. Louis Ottofy, A. O. Hunt and J. D. Patterson, was continued.

The following were elected officers for the ensuing year: S. H. Guilford, president; George H. Cushing, vice-president; Louis Ottofy, secretary; Henry W. Morgan, treasurer; J. Taft, Thomas Fillebrown, B. Holly Smith, executive committee; H. A. Smith, A. O. Hunt and T. W. Brophy, ad interim committee.

The newly elected officers were installed and the president announced the standing committees, as follows: J. A. Follett, L. L. Dunbar, Geo. Edwin Hunt, C. N. Peirce and T. W. Brophy, committee on schools; J. D. Patterson, A. O. Hunt, J. B. Willmott, T. E. Weeks and J. P. Gray, committee on text-books.

Adjourned to meet at the call of the Executive Committee.

ARTICLE VIII.

CLEFT PALATES—CASES IN PRACTICE.

BY DR. BENJAMIN SIMONS.

Read before the South Carolina State Dental Society, July, 1895.

Gentlemen:—I regret that I am unable to be with you and join in your deliberations. Business of a pressing nature compels my absence. I have not however forgotten our Association, and will tender, through the kindness of Dr. Smith, a few models and explanations, which I hope will serve to interest you.

The first case is a replacement of partial denture, jawbone and soft palate of a negro man, about forty years of age, affected with a tumor, which extended from the posterior border of the superior maxillary bone, on the right side, as far down as the lower part of the palato pharyngeus muscle. The tumor has reached such a size as to make deglutition and speech very difficult, and would have resulted in death, but for the timely interference of Dr. Manning Simons, who placed the patient under chloroform and performed tracheotomy, an operation which it is needless to describe to you. He then made an incision in the median labial line, around the ala of the nose, and passing upward and outward about on a line with the lower border of the malar bone; then turned cheek down and removed, with incising forceps, the right side of the superior maxillary bone, with horizontal plate of palate taking also greater part of the tensor, and levator palati muscles and paloto pharyngeus, leaving a portion of the palato glossus muscle. The patient was up and out in about four weeks after the operation.

I at first attempted to take an impression in modeling composition, which resulted in failure. I then saw that nothing but plaster could be used to advantage, this was dangerous but the only alternative, so I determined to try the experiment The patient was placed in the dental chair in upright position, my only assistant being an African boy. The plaster was made quite soft, I dipped same up with two mouth mirrors and placed in little by little just in bottom of V formed by the uncut remnant of the palato glossus muscle, at the same time pressing backward and behind the ragged edge of the palate, and so on carefully built up the root of the mouth. When set hard, removed pieces and trimmed to suit the curve of the mouth and palate. The piece was then varnished and oiled, and before replacing put some soft plaster under malar bone, and above the constriction of the ciccatrix, caused by the incision, then replaced piece, and when plaster had set, removed, which gave me a projection or outer wall of the antrum by which the right side of the jaw was supported. I then took plaster casts of the natural and artificial jaw in position; when set removed them, and took impression of the entire parts, taken seven or eight parts to do this. I then placed in articulator and made up as common plate with this exception, I had no flasks that would hold it, so took two of the White Company's wax boxes and made one and bound it tightly together with wire after carefully packing it, and vulcanized with excellent result. The patient's appearance was very much benefited, and his speech almost restored. I neglected to state that I hollowed out the palate more for the purpose of lightening the weight than forming the antrum, but it served the purpose of both.

The second is a lady of twenty-five, who has congenital cleft palate, with very imperfect speech. I saw her about two years ago. I put in one of Dr. Kingsley's soft rubber palates, the movements of which are dependent upon the motion of the remnants of the palate muscles as you well know. She wore this one year but with little or no success as to improvement of speech, though she could get a closure so as to be able to blow out a candle, so I determined to make her a hard rubber palate and try to educate the superior constrictor muscle, as it was useless to try longer with the palate muscles. So I made a plate bridging the hard palate and attached it to the teeth with clasps, to which plate was attached at the heel two pieces of metal curving down to about a quarter of an inch of touching the superior constrictor muscle and about on a line with the lower border of the velum. I covered this with wax in ball shape, but the wax would not conform to the shape properly, so I made a small ball of wax covered it with soft modelling composition and while warm replaced in mouth, and placed finger under ball to keep in position, and made patient swallow, and repeated same several times heating ball or composition each time until I got exactly the impress of the pharyngeal wall and remnants of palati muscles as shown in model sent. Then took the impression and run counter impressions of the piece in sections as described in first case. Removed model and put in a layer of rubber cutting a hole in bottom of first piece, then waxed up the balance filling same with soft plaster, thus making a ball within a ball, the opened and packed it as regular case, and vulcanized i same tin flask. Took plaster out of ball through hole cut in rubber as described, put in tin piece and covered with rubber and vulcanized. When finished found ball full o water, drilled hole and blew water out and filled with amalgam.

Plate was very light and serves the purpose tolerably well. Patient is improving in speech and has great comfort.

The third case was a negro girl about twenty-two years of age affected with non-malignant bony tumor of the inferior maxillary bone, size about four by three inches. Dr. R. Barnwell Rhett successfully removed jaw from first bicuspid on one side, to ramus on the other. Patient recovered in about four weeks with remarkably little disfiguration. When she came to me for replacement, the pterygoid muscles had pulled the remnant of the jaw within the arch, and I at first thought that I would have to put in an upper plate with guide so as to push out jaw for proper occlusion, but on second consideration resolved to try to cultivate the masseter and temporal muscles with artificial means, so instructed patient to pass finger in mouth and press jaw out, then close tightly. After one week to my surprise, I found that she could articulate the jaws without assistance, so pressed teeth open with rubber so as to get space for the clasps, she having only three teeth left in the lower part.

I then took impression of the remnant of the jaw and tissue with open mouth as usual, and proceeded to make the jaw. But on putting same in was surprised to find that the bite was entirely out, this led to investigation and I very soon found out that on opening'the mouth, the muscles pulled up the tissue, which, when closed occupied a very different position, and that the only way to success was to take an impression when the mooth was shut. So I took an accurate impression with plaster of the remnant of the jaw and teeth, taking also the soft parts, as they were, then made a plate telescoping remnants and teeth accurately, put on clasps surrounding the bicuspid and half around the molar, with rubber on both sides of the jaw, also running a band approximating the curve of the jaw on the other side vulcanizing same, replaced in mouth and trimmed band so as not to press too heavily over on remnant of ramus on other side. I then removed piece and covered lower border of band replaced in mouth and made patient close and pressed lips in position, which gave me an impression of jaw correctly when closed. I then covered upper border with wax and set up teeth one by one until I secured an exact bite, and attached a convex rounded piece at extreme end of jaw so as to glide over and not catch under ramus as a rough end would do, and also to keep the jaw pressed outward, since the end having a different axis must slide to compensate for the shortage. Then removed piece and run counter dies in sections as described, opened same and removed the plaster and wax and replaced with rubber and vulcanized. Patient's appearance is tolerably well restored. Dr. Smith having seen the above cases will be able to give you a better idea of them.—*Southern Dental Journal and Luminary.*

ARTICLE VIII.

DENTAL JURISPRUDENCE.—INFECTION.

BY H. R. WILEY, A. B., SAN FRANCISCO.

The records of Dental Jurisprudence disclose the fact that less litigation has arisen on account of the infection of disease, through the use of dental instruments, than the investigator would naturally expect to find.

Supposing that the average number of thoughtless or careless individuals may be found among the members of the dental profession, it is but reasonable to presume that many serious cases of poisoning have been caused by the use of unclean instruments. Though this view of the matter may not be sustained by our courts, yet the annals of the profession establish it to a moral certainty.

Dr. Rehfuss cites a number of cases in point, collected from the *Dental Mirror* and other sources. The majority of the cases referred to were of syphilitic poisoning, presumed to have been caused by slight abrasions produced by the slipping of the instruments during dental operations.

Though each of these cases seemed traceable directly to the operations of a dentist, and no other reasonable theory appeared by which to explain the inoculation, yet it is possible that in more than one case the dentist was unjustly blamed.

When we consider the fact, that it is held, upon good authority that infection of such disease may occur through the simple and evanescent agency of a kiss, or through contact of the inner surface of the lip wtth the poisoned surface of a drinking cup, we cannot fail to realize that serious difficulty must attend the efforts of the investigator who would arrive at any degree of certainty on the point under consideration.

An appreciation of the difficulty referred to undoubtedly has deterred some individuals from prosecuting suits for damages against dentists, through whose supposed criminal carelessness they believed themselves to have suffered.

The danger of infection, through the medium of surgical instruments, is now fully understood by the intelligent practitioner, and has been ably met by the introduction of antiseptics. A thorough disinfection of surgical instruments, both before and after an operation, is now recognized as an essential principle in surgery, and is applicable to its every branch.

The general recognition of this principle by the profession involves an increase of responsibility on the part of the dentist, and therein lies its legal significance.

The law demands of the dentist that he shall, in all matters involving serious danger to his patient, reduce that danger to a minimum by the use of such means as are recognized and advocated by the authorities of his profession, or such other means as may be proven to be equivalent thereto.

If the dentist does not possess reasonable knowledge of the proper means and methods to employ in a given case, he is chargeable with ignorance; if he possesses the knowledge of the means, but neglects to use them skillfully, he is chargeable with negligence, and under either condition is liable for any injury proven to be the direct result therefrom.

The dentist's safe course lies in acquainting himself with the best means and methods in present use in his profession for preventing infection, and in the employment, uniformly, of those means and methods in his practice.

In case of suit for damages for injuries alleged to have been caused by the use of unclean instruments, in the absence of absolute proof connecting the injury with the operation, the dentist will find a strong defense in being able to prove that he has followed the course above outlined.—*Pacific Stomatological Gazette.*

Obituary.

DR. THOMAS H. CHANDLER.

Died, at his residence, 72 St. Stephen street, Boston, Mass., on Tuesday, August 27, 1895, THOMAS HENDERSON CHANDLER, A. M., LL. B., M. D., D. M. D., dean and professor of mechanical dentistry in the dental department of Harvard University, aged seventy-one years, one month and three days.

Dr. Chandler was the oldest of a family of five brothers. Born in the old Chandler homestead at the North End. Boston, he brought himself by hard and untiring work to a prominent position among the literary and professional men of that city. His early education was obtained in the old Eliot School from which he was graduated at the head of his class, with the Franklin medal. He next entered the Boston Latin School, under Master Dixwell, graduating four years later as Franklin medalist and class leader. Havard's doors now stood open to him, and he entered, after passing the admission examination with honors. His college career was as successful as had been his previous scholastic efforts, and he obtained several prizes for excellence in his studies, and graduated as a Phi Beta Kappa man and president of the Hasty Pudding Club. Having decided to follow the profession of the law, he entered the Harvard Law School, graduating in the class of 1853.

His eyes now commencing to trouble him, he applied for thn post of usher in the Boston Latin School, and obtained it through his high scholarship and testimonials to his capabilities given him by Edward Evcrett, president of Havard College. In 1858 he began the study of dentistry, a science then almost in its infancy, and some years later studied medicine, retaining, however, dentistry as his specialty. On the organization of the Harvard Dental School in 1869, he was offered the post of adjunct professor of mechanical dentistry, and, on the resignation of Dr. N. C. Keep in 1872, he was appointed professor with the degree of D. M. D. *honoris causa.*

The death of Dr. Thomas B. Hitchcock in 1874 left the school without a dean, and Dr. Chandler was unanimously elected to fill the vacancy. During the twenty-one years he held this post, never until the few months preceding his death did he fail in attending a single meeting of the faculty or miss fulfilling a single duty connected with the office. The students all liked him, and his associates all respected him, for he was a man of the most unobstrusive and retiring disposition, which was often carried to the pitch of diffidence.

His literary work consisted chiefly of papers for the different medical and dental journals; an exhaustive article on

"Thumb-sucking in Childhood and its Results" was translated into several European languages, and obtained a European reputation for its author. Translations of two works on dental caries, one by Leber and Rottenstein, and the other from the French of Magitot, were the chief events of his literary career. In this epoch of push and hurry it can be said of few persons that their work was done slowly, thoroughly, and to last. Dr. Chandler's ambition was not to be a shining light, but to use his best judgment, his utmost skill, and the greatest care in every task, however trivial, that he undertook. He was a good husband, a kind father, a true citizen, and an honest man.—*Dental Cosmos.*

SIR JOHN TOMES.

Died, July 29, 1895, at his home, Upwood Gorse, Caterham Valley, Surrey, England, Sir JOHN TOMES, F. R. S., F. R. C. S., L. D. S. Eng., in the eighty-first year of his age.

John Tomes was born on March 21, 1815, at Weston-on-Avon, Gloucestershire. He commenced the study of medicine under the tutelage of a practitioner at Evesham, to whom he was apprenticed in 1831. He entered the Medical schools of King's College and Middlesex Hospitals. He was house surgeon at the latter for two years, and passed the first examination for the degree of M. B. at the University of London in 1839. He was dental surgeon to King's College Hospital for some years, and resigned that post for the same one at Middlesex Hospital. During his house surgeonship at Middlesex he invented forceps adapted to the necks of the different teeth. which caused Sir Thomas Watson to advise him to adopt dental surgery as his profession. In 1840 he commenced practice at 41 Mortimer St. (now Cavendish Place), London, and for some years, even after his marriage in 1844, he had a hard struggle to make both ends meet. In 1845 he invented a machine for copying in ivory irregular curved surfaces, which obtained the gold medal of the Society of Arts. In 1845 he also delivered the course of lectures at Middlesex which marked a new era in dentistry, and when published in the *Medical Gazette*, and afterward, in 1848, in book form, at once made his reputation as a scientific observer. In relation to these lectures there is this note in his diary: "I am resolved never to deliver any more lectures unless I have a class of six."

Following the announcement of the discovery of the anæsthetic use of ether, in 1846, by Dr. Morton, of Boston, Mr. Tomes at once took it up, and successfully used it in his work at the hospital. In 1843 he joined a few leading dentists in memorializing the College of surgeons to recognize the claims of dentistry to be considered a department of general surgery The attempt at that time failed, from lack of support upon the part of the medical profession and from the absence of popular sentiment in its favor. The interest of Mr. Tomes was unabated, however, and he continued his labors and interest in the cause he had championed until his object was accomplished, in 1859, by the establishment of a department of dental Surgery at the College of Surgeons.

On June 6, 1850, he received the Fellowship of the Royal Society, as being "distinguished for his acquaintance with the sciences of anatomy and physiology."

In 1859 he published his "System of Dental Surgery." a standard work so well and favorably known as to require no further comment herer In 1862 a strong feeling which had arisen that the services of Mr. Tomes merited some public token of the gratitude of the profession took definite form in the presentation to him, on July 16, of that year, of a handsome service of plate by several of his brother practitioners, in acknowledgement of the many valuable services he had rendered to his profession.

As he had been actively interested in securing the recognition of dental surgery as a department of general surgery, by the establishment of a more thorough educational curriculum for dental students, so in like manner his interest and activities were enlisted in the movement toward making the new standard of education obligatory by appropriate legislation. With untiring zeal he labored with others to that end, and on July 22, 1878, the Dentist Act became law. Sir John Tomes was the first to inscribe his name upon the Dental Register.

On July 26, 1880, the profession presented Mr. Tomes with a portrait of himself, by Macartney. In 1883, the very high compliment of Honorary Fellowship in the college of Surgeons was conferred upon Mr. Tomes. The college having the right to confer its fellowship upon but two persons annually; Mr. Tomes and Professor Huxley were selected for the honor as representative men of science, worthy of special regard. In May of 1886 he received and accepted the offer of knighthood "for eminent services rendered his profession."

In 1893 it became known that the golden wedding anniversary of Sir John and Lady Tomes occurred upon February 15, of that year. The opportunity thus afforded to the profession of once more showing its appreciation and regard was enthusiastically welcomed. A deputation went to Upwood Gorse, and Mr. Brunton presented to Lady Tomes a silver-gilt inkstand, on behalf of the wives of the members of the profession. Sir Edwin Saunders announced the foundation of a triennial "Sir John Tomes" prize, to be awarded by the College of Surgeons, in recognition of satisfactory scientific work by Licentiates in Dental Surgery, and Mr. Hutchinson read an appropriate address on illuminated vellum, signed by a large number of dentists.

In the summer of 1894 his health, which for years had not been robust, was impaired still further by what appeared to be indigestion. This increased greatly, and in May his illness assumed a more serious form, and gradually growing worse, in spite of the best medical care, he died July 29, and was buried at St. Mary's, Upper Caterham.

Sir John Tomes, during the course of his career, filled the highest positions within the gift of his colleagues, and in each of these he evinced qualities of leadership and capability which raised him to the highest place in their esteem. His love of fairness and right, and the judicial qualities of mind which were among his strongest attributes, were qualities which gained for him the respect and confidence even of those to whom he was at times opposed.

His numerous contributions to the science and art of dentistry stamp him as a scientific observer of the highest order of merit, and the sum total of his characteristics, as recorded in his valuable life-work, will ever maintain his splendid example as an ideal for future generations of his followers to emulate.

We are indebted to the *Journal of the British Dental Association* for the greater part of the data upon which the foregoing sketch is based.—*Dental Cosmos.*

Editorial, Etc.

THE CARE OF CHILDREN'S TEETH.—In the August (1892) number of this Journal we said—under the head

THE DENTIST A TEACHER.

It is admitted that children's teeth do not receive the degree of attention which they demand. The public mind believes that because the period of duration of the temporary teeth is a brief one, they are not worthy the care which is bestowed upon the permanent set. Children are given little, if any, dental treatment until they are about ten years old, by which time, through the ignorance or neglect of parents almost irreparable damage has been done to the sixth year molars, large teeth well adapted for mastication. Physicians and dentists by statistics have shown that 56 per cent. of the upper molars are decayed before the seventh year, and that the lower molars, coming first, decay at once; 20 per cent. during the first year, and 70 per cent. bythe third year, after eruption.

The number of teeth lost is now so extensive that it assumes a national calamity, for the digestion being impaired the physical stamia of the nation is injured. The evils arising from insufficient mastication caused by the loss of teeth can not be exaggerated. The dental profession is, in a great measure, responsible for the ignorance respecting the mouth and the teeth. If schools would engage the services of properly-qualified dentists, the needless loss of many teeth may be prevented. Instruction in the daily care of the teeth could be given.

The subject is now receiving special attention. The American Dental Association at its meeting in Asbury Park, in August, "regards the suggestion as to the education of children in the proper care of their teeth as of great interest and suggests further discussion upon it," the Board of Dental Examiners of Tennessee at the request of the State Dental Association had printed and distributed throughout the state copies of the following.

To Instructors in the Public Schools in the State of Tennessee:

RECOGNIZING the necessity of impressing upon children early the importance of the care and preservation of their teeth, the Tennessee Dental Association, at its meeting in Knoxville in August last, requested us to prepare an essay inviting your attention to this vital subject. You are requested to impress upon your pupils that it is of greater consequence to their health and happiness to observe the few rules here laid down than the observance of most other hygienic laws.

Placed at the beginning of the alimentary canal, our teeth hold an important relation to the digestive function, and through it to the entire body. They are inseparably connected with the nervous, circulatory, and respiratory systems. Henee their preservation constitutes an important art in medicine; for without healthy teeth, there cannot be thorough mastication; without thorough mastication, there cannot be perfect digestion; without perfect digestion, there cannot be proper assimilation; without proper assimilation there cannot be nutrition; without nutrition, there cannot be health; without health, it is impossible to attain the highest perfection of mental, moral, and physical growth.

Upon the soundness and perfection of the teeth, therefore, much depends as regards the health, comfort, personal appearance, and voice. Every one should recognize the importance of their preservation, and impress upon children early in life the necessity of keeping their teeth and mouths clean and in good hygienic condition; for if neglected, the teeth frequently become not only diseased and produce great suffering, but are lost before middle life.

Decay is not the only disease to be combated, but fraquent irregularities, incrustations of tartar, diseases of the gums, and around their necks. producing foul breaths, disordered stomachs, and indigestion.

Children should be advised to rub their gums with soft cloths and thoroughly brush their teeth, freeing all spaces between them from food and other accumulations, after each meal and before retiring.

Whenever cavities of decay exist they should be stopped, to prevent the further destruction of the tooth and avoid the loss of its function.

That the children of the State of Tennessee may be impressed with these facts, we address this notice to you, begging that you will not only now, but through the coming sessions, repeatedly endeavor to bring to their attention the important truths set forth in this circular, and thus help the dental profession in its efforts to add to the comfort, happiness, and average length of human life.

Lady Aberdeen, wife of the Governor-General of Canada, has made a suggestion, says the Buffalo Courier, which may lead to action on the part of the overseers of public instruction in the Dominion. The suggestion, continues the Courier, is that the teeth of the pupils in the public schools should be regularly inspected by experts appointed by the government. Inasmuch as none of our organs is so much injured by neglect as the teeth, and children try to avoid caring for them because of the bother, the plan which Lady Aberdeen suggests has some merit. The general vaccination of the children in the public schools is conceded to be necessary, but as a matter of fact the public health and public good looks are in just about as much peril from bad teeth as from small-pox. How much more pleasing to the eye would the next generation be if expert inspectors would show in the public schools the benefits arising from a care of the teeth! Many a beautiful face which nowadays when it breaks into a smile, at once becomes disappointing would then be rendered only more attractive by the twin rows of white, firm teeth shining between the parted lips. It is to be hoped that Canada will make some experiments in this matter and report upon the result of them.

The Youth's Companion has this to say about good teeth in children :

"All diseases which profoundly affect the nutrition influence the development of the teeth; and since the growth of the teeth is mainly limited to the age of childhood, their condition is especially influenced by children's diseases.

"Faulty nutrition or severe wasting illness show themselves nowhere more prominently than in the development of the bones and teeth; and on the other hand good teeth in children play a very important part in producing a healthful and robust manhood or womanhood. Decaying or loosened teeth directly favor imperfect mastication and consequent indigestion.

"Indigestion favors poor nutrition; it causes the secretions of the mouth to become acid in reaction—a perversion of the normal reaction of the saliva, which attacks the teeth and favors their rapid decay.

"A case of this kind has lately been observed. A child, naturally good-natured but "spoiled" by indulgent parents, was allowed to eat fresh cakes, expensive candies, jams, pastries. Attacks of indigestion, with vomiting of the acid contents of the stomach, supervened. The teeth softened, "became poor" at an early age.

"In order to assure such a child a healthy bodily development and protect it from the evils of subsequent attacks of indigestion, there must be something more than a correction of its diet. The teeth should be filled. This guards against disease of [illegible]olar process, or the bony portion of the jaw into which the roots of the teeth are inserted, against an involvement of the second tooth, just developing beneath the first.

"A regular supervision of children's teeth would save large dentist's bills, and would undoubtedly tend to a healthier, stronger race of mankind. From the time of the first appearance of the teeth through the gums, they should be subjected to a rubbing twice a day with a soft rag and lime water, until the twelfth month of infancy, when a soft brush should be substituted.

a ~~[illegible]~~ conscientious

"Frequent visits to ~~the~~ dentist are an absolute necessity.

"Children who are allowed to eat warm bread, rich pastries, cakes and candies are almost invariably subject to habitual attacks of indigestion. The far-reaching effects of such attacks can be avoided by the prohibition of such food. Meat, not too tender, and crusts of bread are excellent objects upon which a child's teeth may be exercised and strengthened."

And Harper's Weekly concludes an article with these words: "Take it all in all, care of the teeth pays in comfort, in beauty, in the conservation of health from youth to old age." R. G.

Monthly Summary.

DISTURBANCE CAUSED BY DISEASES OF THE TEETH.—An interesting paper on this subject was read before the Harvard Odontological Society by Dr. Edgar F. Stevens, of Medford, Mass., in which a number of cases are cited to prove the important part that diseases of the dental organs play in nervous disturbances of different parts of the body. Few physicians, particularly those educated twenty or more years ago, think of the teeth as having anything to do with these pains, for the reason that in their student days they had scarcely any opportunity of learning anything about the teeth or oral cavity. "The time is coming," says Dr. Stevens, "when the student of medicine will have the same opportunities of studying dental pathology as he now has of studying diseases of the eye, ear, throat, etc." We should impress on our medical friends the fact that the intelligent dentists should be consulted by them in cases where disturbances of the nervous system do not readily yield to general treatment. —*Dominion Dental Journal.*

ABSCESSES.—I treated with a donaldson broach. Gates-Glidden drill, a great deal of warm, carbolized water, and a syringe, a long piece of cotton with carbolic acid on the end, and common sense; and I cured it, so far as I can see, and the patient is satisfied.

Now, as to how I filled it. I cleaned the roots out. It being a lower sixth year molar, I find the distal root has but one canal; the median or front root two, not two roots, but two canals. I take the oxid of zinc and mix with oil of cloves to a thin paste, or a little thicker, and after drying the roots as thoroughly as I can, keeping dry with napkin or dam, I place a little in the root and take a small piece of gutta-percha, warm it and force it in the root as far as I can, and then fill the roots with gutta-percha. I fill part of the crown with cement for a foundation and then build any kind of filling on that.

I have been fairly successful with dead or pulpless teeth, but not as much as I have where the pulp is a live one in a good state.

I have found as much decay in teeth this past year as I have in the years previous, with all due respect to those D. D. Ss. who would have us believe that they can prevent it, and I find that teeth decay around their fillings all the same.—A. A. Pearson in *Alabama Society*.

TO OPEN UP A BLIND ABSCESS.—With a small swab apply a drop of trichloracetic acid on the gum over the apex of the root; twist the swab gently, applying more acid till you reach the alveolus; with a spear-pointed drill go through the alveolus to the sac; with a swab apply carbolic acid (Calvert's No. 1, full strength), thoroughly permeating the tumor; if necrosis is present enlarge the opening and get direct contact with the diseased bone; syringe out the tract with pyrozone, and pump in concentrated lactic acid; saturate a small tampon of cotton with campho-phenique and aristol, and leave in the opening for two or three days till connective tissue begins to form.—A. C. Hart, in *Items of Interest*.

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ARTICLE I.

PYORRHEA ALVEOLARIS.

BY DR. B. F. ARRINGTON, GOLDSBORO, N. C.

Mr. President and Gentlemen of the Maryland State Dental Association:

In looking over a recent issue of the *Dental Cosmos* and reading a lengthy paper pertaining to the treatment of pyorrhea alveolaris, written by a prominent member of the profession, giving his treatment in full, very elaborate, displaying unquestionable ability as a writer, and extensive familiarity with remedies; but so seriously deficient in correct features of a right conception of the disease and conservative treatment for relief and cure, as I view the subject, I have decided to discuss this much abused subject, and will, instead of mentioning more than seventy-five remedies, as in the paper above referred to, for treatment of the disease, name less than half a dozen (quite sufficient) including *forceps* and *scalers*, important factors in treating cases of long standing.

In looking over some dental journals one rainy afternoon not long since, I recorded in less than two hours time more than a hundred remedies suggested and advocated by sundry writers and practitioners of dentistry in the treatment of pyorrhea. I paused to reflect and was amazed at so extravagant a mention of remedies, and so dissimilar in properties, the like never known or heard of before in the practice of dentistry or medicine. I felt not only amazed, but must candidly confess I was disgusted and wished truly that better judgment should prevail to guide in practice. But when I read the paper in *Dental Cosmos*, and noted the mention of more than seventy-five remedies by one practitioner (and he a professor in a dental college) I considered the climax as to enumeration of remedies had been reached and it was time to call a halt. You can imagine my surprise and non-acceptance of such a line of remedies and treatment for a single disease, a disease simple and controllable, possibly of more frequent occurrence than any disease known and treated by the dental or medical profession. My greater surprise was that editors (practicing dentists) in charge of dental journals will permit articles so extreme and impractical to be published. Certainly no good can be effected by them. Less writing and discussing for notoriety, and more for practical benefit would doubtless profit us more. The paper in question enumerating so many remedies is ably and well written, and valuable in some respects. but is far short of the mark in a practical point of view in reference to treatment of pyorrhea. The various theories (as to the cause of the disease) set forth and advocated by sundry parties are almost as numerous as the remedies proposed in treatment, varying from slivers of tooth picks implanted between teeth, to gouty diathesis, diabetes, systemic debility, displacement of uterus, etc. A well known professor (a ready writer) in one of the dental colleges in Philadelphia sets forth as causes of the disease as follows: "Systemic predisposition, combined with decided induration of tooth tissues or other local irritant (sanguinary calculus, caries, or necrosis of process edge and gum pouches)." A conglomerate mass of absurdities, and fa[illegible] from correct as to cause. The causes enumerated, except systemic predisposition, are almost universally consequent upon the disease, and when not, certainly not the cause. Pyorrhea, like most other well defined diseases, has one cause and one only, not many, as some seem to think. It is such unreasonable guesswork and wild theorizing as this, heralded by prominent men in the profession, that leads astray and causes so much controversy. Unfortunately for those to be instructed in dentistry, all professors in dental colleges are not as knowing and practical as might be, and ought to be. By such teachers much is done that has to be undone. Some contend that pyorrhea is a constitutional disease, and requires for cure, constitutional treatment; others contend that it is only a local disease, and requires only local treatment, and there are others, a small minority, I am glad to say, who contend that it is constitutional and that there is no cure short of removal of the teeth; weak theory and censurable practice. Some of the best men in the profession argue and insist that the disease commences at apex of roots of teeth, while others, equally able and experienced in the practice of dentistry, contend that it commences at the gingival border or margin around the necks of the teeth. Why should there be such difference of opinion on the subject? Were I to attempt to quote authors, as to cause and treatment, it would make this paper too lengthy and of no additional value. If the literature published on the subject in dental journals during the past twelve or fifteen years could be compiled and published in book form it would make several volumes of thousands of pages (mostly impractical and valueless matter) speculative theory as to cause, and impractical ideas as to treatment. The profession would, in all probability, be disgusted with the compilation as a whole. After all that has been said and written concerning the disease, the profession stands as far apart and non-agreed as to cause and treatment to-day as it did ten years ago. There has been too much said about a little matter, and discussions and controversy continues, and no one knows or can predict when or where it will end. The great amount of theorizing as to cause of the disease and the extravagant list of remedies (embracing hundreds) recommended in treatment, exceed anything to be found in dental or medical literature, and instead of establishing facts to base action upon, has created confusion and doubt, and is misleading junior members of the profession, some even doubt the propriety of attempting to treat the disease. I know men in the profession who have never treated a single case, and invariably advises against treatment, saying to patients that the disease is incurable, and if treated and checked, it will soon return again. So much for false theory and false teaching of older heads, (some *professors* in *dental colleges*.).

When a practitioner of dentistry proclaims that Pyorrhea is incurable and advises non-interference, it is evidence of ignorance and non-progress, inexcusable, considering the progressive period in which we live. I know of a professor in a dental college, (presuming to impart instruction for the preservation of teeth, who proclaims that extraction of teeth is the only sure remedy for cure of of pyorrhea, quite as extreme and short of the true line of conservatism that should guide in teaching and practice, as the author of the paper here mentioned, who enumerates remedies so extravagantly, or the third professor who names so many causes of the disease. Such extremes and hitting short of the mark, evidence weakness and something wrong, there is evident fault somewhere, and it should be investigated and remedied, if possible. Such men cannot be regarded as safe guides and teachers of dental practice. Few educators in dentistry, a medium ground, always conservative, is wisest and safest, best for those instructed and for patrons they are to severe. What would be thought of a practitioner of medicine or a surgeon who would advocate and advise the amputation of an arm or leg infested with chronic ulcers, because remedies applied and reapplied for weeks or months failed to cure, or should mention for use in treatment remedies more than "three score and ten?" I very much question if any medical journal in the country would give publicity, with favorable endorsement, to any such unreasonable theory and practice. It is sadly to be regretted that so much has been written and discussed pertaining to the disease, cause and treatment, unless something more definite as to both, had been established and agreed upon.

Pyorrhea alveolaris, as we term it for want of a more appropriate name, (gingivitis preferable), is a diseased condition of the gums, originating in, and always in its incipiency, confined to the gingival border, never at the edge of roots of teeth, or anywhere on roots, from apex to margin of alveolar process. The disease is local, well defined and easy to diagnose. I reiterate without fear of successful contradiction, that it always, without exception, commences in the gingival border, therefore is misnamed when called pyorrhea alveolaris. The alveolar process is never involved until the disease, commencing at the border or margin of gum has considerably advanced. Pus does not originate in the alveolar process, (no one can show it and prove it), nor is there any waste of the process only as the effect of pus generated in the soft tissues. In the early stage of the disease there are neither pus nor granular deposits. The first deposits are granular and always confined to the necks of the teeth; then follows pus formation and discharge, which more frequently than otherwise continues until the teeth loosen and drop out, or the disease is treated or cured. I have never known teeth to loosen until after cessation of granular formations around the necks of the teeth and the formation of solid cake deposits on the roots. Always the consequence of a disturbed, abnormal state of soft tissues.

A patient, female, aged 68, from whose mouth was extracted months ago the five teeth here exhibited, had been troubled with the disease more than thirty years. When I first saw her, twenty-seven years ago, and detected an unhealthy state of the gums, there were granular deposits, more or less, around the necks of all of her teeth. The deposits were never removed by means of instruments, but, as you see, passed away, possibly through use of the brush. She assured me when I extracted the teeth that no dentist had ever advised her to have the deposits removed since I advised her to do so, in 1867; said she had used mouth washes freely, recommended by dentists and physicians to cure the scurvy as they termed it, and that possibly she had expended several hundred dollars for such remedies, and without any good result. My observation has confirmed the impression on my mind that the granular deposits formed around the necks of teeth, will, sooner or latter, waste away and the surface become smooth, as you see demonstrated on the specimens, but the solid cake deposit, which is a second deposit later on in the disease, (very much of the character of deposits found on apex of roots) and never till the granular formation ceases, but when formed, is there to remain, never wastes or obliterates as the granular but increases, to the destruction of alveolar process and loss of teeth.

"Sanguinary deposit at or near the apex of roots is more difficult to treat than the disease in question. In the case of sanguinary deposit (not the effect or result of pyorrhea) the pus is formed deep down in the socket and progresses for exit, to alveolar margin. Whereas in pyorrhea the pus formation commences at the margin of alveolus and by degrees invades the entire process, leading to loss of the same and loss of the teeth. Every case of gum waste or recession of gum tissue we meet with is not pyorrhea; far from it. In a genuine case of pyorrhea that has advanced beyond the incipient stage, we find tumefaction of gum, discharge of blood or pus (often both) on application of pressure. In cases of recession of gum (not caused by pyorrhea) we find the reverse, almost universally. Instead of inflammation, tumefaction and discharge of blood and pus from the gum, as in pyorrhea, the gum is often pale, contracted and shriveled. I have seen many such cases, with loss of alveolar process and recession of the gum quite to the apex of the palatal roots of the superior molars, with freedom from tenderness under pressure, (and no blood or pus visible.) In such cases the teeth never loosen as they do in pyorrhea, nor is there fetid breath. In well developed cases of pyorrhea, far advanced, deposits are always to be found and blood and pus freely flow. In gum waste or recession of gum, there is no deposit, or very little, ever to be found, nor is there discharge of blood or pus. Very unlike derangements of gum tissues. Pyorrhea, if neglected, becomes offensive and loathsome. Gum waste progresses slowly, without painful, disagreeable or offensive features, and never to the extent of loss of teeth" In case of sanguinary formation located at or near the apex of roots, extraction is the only sure remedy, and should not be delayed. It is impossible to effect cessation of pus discharge in pyorrhea so long as a minute particle of cake deposit remains on any portion of a root in contact with soft tissues. When the deposit has advanced to the extent seen on specimens nothing short of extraction will give relief. I contend, and have for many years, that when from the effect of the disease there has been destruction of two-thirds or three-fourths of the alveolus, teeth should be extracted, for there is no line of treatment by which the alveolar process can be restored and teeth made firm in sockets, nor can the gum ever be made to adhere again to the teeth, but if there is sufficient alveolar support, and all deposit is removed, the gum, after proper treatment, will assume healthy action and contract closely and firmly around the teeth, and if persistently manipulated with a tooth brush of suitable size and shape, and occasional finger pressure, will continue normal and perform a healthy function through life, unless weakened and rendered abnormal by some other disease than pyorrhea.

Some dentists do not recognize or acknowledge the difference between genuine pyorrhea deposits and ordinary calcareous deposits. The specimens submitted demonstrate the difference. Pyorrhea deposits never attach to enamel and crowns of teeth, but always to the cementum, while the ordinary salivary calculus adheres to enamel, and sometimes completely coats and covers crowns to the thickness of a sixteen or eighth of an inch, and is easy of removal compared with pyorrhea deposits.

Pyorrhea, like any other disease, is amenable to treatment; and can be cured, and when cured will remain so, if instructions as to care, cleanliness, free use of brush, etc., are carefully observed. There is no justification for so much talk about the disease not being curable, such ideas are extremely absurd, should and must be discarded, and all must treat for cure, and the results will prove convincing and satisfactory. What one man in the profession can do, others can, on the same line of procedure, if they will. I have not, nor do I presume to say that the line of treatment I pursue alone will cure the disease, but I do say emphatically, it will cure nineteen times in twenty. I have experimented considerably with various remedies recommended, but have never obtained as good results as with the remedies and treatment I will name and recommend in the interest of humanity.

As there is such diversity of opinion as to possibility of cure of this much discussed and abused disease, it may to some seem presumptious and egotistical in me to profess to be able to cure the disease with few remedies and but little trouble, and as effectively in a large percentage of cases, as any disease known to man, but there is no presumption or egotism in the matter. I make this statement on the subject as to treatment and cure to assist, in a plain, practical way, my professional brethren, if possible, and encourage them to regard the disease as curable, and to proceed on a conservative and effective line of treatment, trusting that favorable results may be the reward of their efforts, made in the right direction.

The first step in treatment is to test the strength of the teeth in their sockets, and if any are to be extracted (all should be that cannot be made comparatively firm in socket), extract before commencing to remove deposits. Thoroughness in the removal of deposits is all important in treatment, and to secure perfect success, *smooth edge scalers* must be used, such as I send for careful inspection, five of a set of ten I use, points varying in shape and size. Of the five, with those marked one, two and three, I remove at least nineteen-twentieths of all deposits. You perceive the edges are smooth and can do no injury to surface of root, alveolar process or soft tissues surrounding. To lacerate the gingival border (entire) and produce new action if possible, is important for cure. The removal of deposits prevents continuation of the disease, but does not prevent return of it. Soft tissues below and away from gingival border should be preserved as free from injury as possible; also the alveolar process, which is never in fault and has no part in the disease but to suffer loss, and is often seriously affected as the effect of a cause always originating in the gum border, which increases by degrees and creates the cause of alveolar trouble. Remove the cause and the effect will abate and the alveolus will speedily take on healthy action, always will, if deposits are thoroughly removed and *sulphuric acid* is generally applied. The practice advocated by some, to chisel, scrape and burr away the alveolar process (any portion of it) is absurd. Sulphuric acid properly applied is better for weakened and softened alveolus than chisels, burrs and scrapers.

I have never chiseled and scraped the process in treatment of the disease more than two or three times, and then it was not imperative for cure. When you think the last vestige of deposit has been removed, probe carefully again and again to make sure of completeness. In some extreme cases it requires from two to three hours' persistent effort for removal of deposits; when this has been accomplished, then with brush of proper size (small) and shaped to suit, brush heroically with diluted C. P. sulphuric acid and pulverized pumice (not finest) varying according to age and extent of disease, from one of acid to ten, fifteen or twenty of water. Make it a point, universally, to fret and lascerate the margin of gum with brush and pumice, with a view to new and healthy action. Do not fear injury to surface of teeth from the effects of the acid. No injury ever does or can result. As evidence of the slight effect upon enamel or cementum, I send for inspection a tooth which was kept in mixture of one of acid to ten of water, twenty-four hours.

Much good and no harm can come of the free use of sulphuric acid in treatment of the disease. It is seldom necessary to apply it more than one time for care. After the use of brush, acid and pumice, press the gums well with the finger, then apply to the gums freely camphophenique (full strength) and instruct the patient to use the brush, same as was used in the treatment, forcibly and systematically, several times daily for a week or two, specially after meals and before retiring at night, and to follow the brushing with finger pressure until the gums are healthy and firm, Advise the patient to return to the office the next day after treatment or the day following, and for several days, for careful inspection, probing and removal of any particles of deposit that may be detected, and to see if instructions as to brush and finger pressure are respected.

Some patients will neglect to carry out instructions, if not watched and encouraged to persevere. It is important in treatment and really essential, to use the brush forcibly and fret the gingival border to bleeding, if possible, for several days after removal of deposits. Applications of campho phenique (full strength) to the gums two or three times daily for several days will prove beneficial. In the incipient stage of the disease, before granular deposits are formed around the necks of the teeth, the free use of acid and pumice with brush is all that is requisite to check and obliterate the disease. It is at that stage as truly pyorrhea as in more advanced stages, when there are deep pus pockets, cake deposits on roots and teeth loosened to loss. It commences as pyorrhea, progresses and ends as pyorrhea, is pyorrhea all the way through, from commencement to cure or final loss of teeth. One line of treatment is requisite for cure, viz. : that above stated. If faithfully tried and persevered in, good results will always be realized. In cases as we meet with them, cure can be effected in from five to ten or fifteen days.

Such are my convictions, based upon experience and careful observation of results during many years' practice. I have made a specialty of the treatment of this disease for some years and only state as to treatment and results what I know to be facts, facts that will be realized and appreciated as such by any unprejudiced. fair-minded practitioner of dentistry, who will faithfully experiment for results on the line of treatment above indicated. The idea that *various causes* as above enumerated, can and do produce the disease in erroneous, and as ridiculously absurd as for physicians to say (some do) that this or that disease runs into typhoid fever, or that typhoid fever is the consequence of a broken or otherwise injured limb, or any other physical injury. Typhoid fever is a pointedly marked and distinct disease of well defined features and characteristics, and never the result of other diseases or physical injury. So it is with pyorrhea. No man can produce it by any injury he may inflict upon gum tissue or parts adjacent. It is spontaneous and truly an independent disease, having its well defined marks and running its course if let alone. In its incipiency it is recognizable and much more strongly marked and outlined than many other diseases, and if let alone will slowly advance to destruction of alveolus and loss of teeth. There is but one class of persons [the toothless) free from its ravages. It is of as frequent occurrence in early life, after the age of twelve or fourteen as in later years, but the cake, or sanguinary deposit (as termed by some) is never so well developed, and teeth but rarely loosen from effect of the disease before the age of thirty or thirty-five.

As to cause we are yet ignorant, and may grope in darkness on the subject a great while before the shadows are dispelled and the true light of cause shines forth. Physiologists and pathologists must investigate and settle the question. I am inclined to the opinion that the *saliva* contains the cause of the trouble. It is more reasonable than any other theory I can venture. After treatment and cure, the daily use of a tooth-brush corresponding to sample exhibited is requisite and occasional finger pressure will aid healthy preservation of the gums and serve as a safeguard against return of the disease. The size, shape and quality of a brush for daily use is an important matter. To cleanse the teeth well, and do no detriment to soft tissues, is to be considered in the selection and use of a brush. Large brushes with stiff bristles, closely set, are objectionable and are always more hurtful than beneficial.

I am impressed with the idea that a very large percentage of all the cases of pyorrhea I have ever seen, that could be successfully treated, the single line of treatment above stated, simple, plain and practical would suffice. The fewer the remedies, the better, so a good result is obtained. The advocacy of and sanction of a hundred remedies or more, for treatment of a single disease is contrary to all reason and radical in the extreme, and can but tend to bewilder the minds of young practitioners and cause many to question and doubt their ability to treat the disease at all. So much speculative theorizing as to cause of the disease and treatment, has doubtless done more harm than good, for there is no evidence of advance and a general line of treatment, truly defined, established.

I am recently very definitely convinced on one fact in relation to pyorrhea. It is not contagious or transmissible from one person to another. I have watched carefully for results for more than a quarter of a century, and I am now thoroughly convinced that there is no such thing as transmitting from parent to child, or from any person to another under circumstances. I have known several families residing in the country, embracing each parents and five or six children, where one or both parents were subject to the disease, well defined, and all would use one co-partnership toothbrush (a disgusting practice) until worn out, then another and so on, as needed, and not a child after a lapse of ten or fifteen years ever evinced the slightest feature of the disease. In one case in point, the husband, very loving and affectionate, fond of kissing his wife and children, was subject to the disease for more than thirty years (a typical case), losing by waste of process tooth after tooth, until but few remained in his mouth, and never did wife nor any of the children show signs of the disease. He (the husband) enjoyed good health, and he assured me more than once, he never suffered a moment from indigestion and experienced no particular discomfort from the disease.

I will mention one more case which I watched carefully for results for eighteen years, anticipating evil results from a censurable practice, but was disappointed. Mrs. —— died leaving a boy child about six or eight months old, who was taken charge of and cared for by its grandmother, and an old aunt, both subjects of pyorrhea well advanced, many teeth very loose, gums inflamed and swollen and blood and pus discharging freely under slightest pressure. The child was the pet of the family, and was tenderly cared for, first one then the other, grandmother and aunt feeding it, and for months the process of feeding was as follows: One or the other would chew and pulp the food in their mouths, then put it in the mouth of the child, so the food was prepared and administered until the child was able to masticate for itself. I advised against such a course and informed them of the chances and very great probability (as I then thought, do not now) of transmitting the disease to the child, but they heeded not. The child survived and grew up to manhood years and stature, a splendid specimen of physique and blessed with as healthy gums and sound teeth as could be desired. Should the young man be troubled with pyorrhea (quite possible) after this, would any contend that the disease was transmitted through food pulped and administered by grandmother and aunt? I could state other cases almost as extreme and quite as convincing to unbiased minds that the disease is not transferable by any process of contact or through any channel of conveyance of disease.

The disease has many peculiarities, and will oridinarily if not treated, run its course, and in a large majority of cases, will hold on during life or until the teeth involved loosen and drop out. All persons troubled with the disease do not suffer alike. Some do not experience any discomfort or inconvenience from the disease, while others suffer greatly and fail in health. Dentists should not be over-exercised concerning the cause of the disease. Physiologists and pathologist must and will settle the question, and possibly very soon, if they will look to the *saliva* during incipient stages of the disease and work on that line for facts that will be convincing. The important consideration for practitioners of dentistry is to learn how to diagnose correctly and treat for cure. If we will concern ourselves less about cause and direct our efforts in preparation to treat successfully pyorrhea or any other type of disease that may present for treatment, it would be wiser and more in line with our province of action, and doubtless best for our patients. All this theorizing and discussing as to cause, and advocacy of innumerable remedies for treatment is of no special benefit to dentists or patients, but is often mystifying and hurtful. To investigate cause of disease is one science, and to treat for cure is another, quite apart, separate and distinct, and if we attempt to couple them, we confuse and fail of best results. Cases known or not, let us treat to cure, and cure we can.—*Dental Cosmos* and *Southern Dental Journal.*

ARTICLE II.

DR. PAINE'S LOCAL ANESTHETIC.

President Younger.—In reference to Dr. Payne's anesthetic, give your opinion of its actions, contrasts and merits. As for my anesthetic, have no delicacy on my account. If as good as it appears I shall certainly abandon mine for it.

Dr. Merriman, Jr.—The immediate effect of the new anesthetic was astonishing. After injecting an anesthetic we usually wait a few moments, but with this the Doctor was able to act at once. The patients apparently felt no pain, particularly the young lady, whom I watched very closely.

Dr. Geo. W. Cool.—I fully appreciate the work of Dr. Payne's anesthetic from the experience I have had in the use of local anesthetics; I don't know of one that localizes the anesthetic effect so rapidly. I was particularly struck with Dr. Younger's anesthetic, but, although a success in his hands, I doubted its success in mine.

Dr. Cecil Corwin.—I had a personal experience with Dr. Payne's anesthetic in my own mouth as he operated on my gums. The anesthetic was the most immediate and profound of any I have ever used in my mouth. Have also had Dr. Wilson's and Dr. Younger's applied to my gums. They have their merits. Wilson's is good in some cases; Younger's a little better, but I think we have now something still better. This clinic alone has repaid me for all my time in attending the meetings of the Stomatological Club.

Dr. R. H. Cool.—I was thinking of the use of nitro-glycerine in this compound. A year ago I advised the use of nitro-glycerine with cocaine. I still insist that such should be the case. I notice that the preparation put on the market by S. S. White & Co. for Dr. Kirk contains nitro-glycerine. I think every anesthetic made hereafter will contain it; no matter how small the amount used, it will have a stimulating effect. I always use a cardiac stimulant with the application of cocaine. Dr. Payne in his formula insists on the use of chemically pure German glycerine. He says that the ordinary glycerine contains arsenic, which probably accounts for the sloughing when using it. The effect to-day was so pleasing to me that I wish to thank Dr. Payne personally, and I shall certainly use his anesthetic.

Dr. F. C. Pague.—One point in the clinic caught my eye, and I took it home to myself; I fell on it by accident. In the introduction of the hypodermic syringe I have been in the habit of finding the soft tissue. I accidentally took a needle and run it into the hard tissue flat, as Dr. Payne demonstrated to-day, and the patient did not move. On the opposite side I run into the soft tissue with contrary results. Hunt the hard spots and introduce the point flat.

Dr. Cummings.—The Doctor's manner of introducing the needle, I accidentally found out, makes a good deal of difference. Press the tissue to keep the blood away. The anesthetic worked very nicely, and I am very thankful to Dr. Payne for the formula.

Dr. Younger.—The needle was very short and could hardly be introduced over half an inch. How could it reach apex of root to obtund the nervous texture passing out of the apex, unless we accept the statement of Dr. Brophy and Black, "that the inferior dental nerve gives no filament to the dental pulp, and the sensation is due to lateral means," In using my anesthetic I have tried to get as near those parts as possible and obtund to prevent pain. Dr, Payne did not insert even half of an inch, and extraction was accomplished without any pain. It is the best anesthetic I have ever seen, and is away ahead of mine. I am very glad to find something better and I feel under obligations to Dr. Payne; I shall certainly abandon mine until I find it is better. He did not go into the soft tissues at all, yet the insensibility produced in that half of an inch was enough to obtund the sensibility in the whole tooth, and that is what surprised me to-day.

A member.—Q.' I would ask Dr. Payne if he has ever had any ill effects? A. None at all.

Dr. Lundborg.—I observed that in injecting the anesthetic the Doctor did not seem to benumb the gum with the anesthetic before inserting the needle. Was not there some sensation? I have found in injecting cocaine that by putting the needle in boiling water, then injecting hot water, and after that inject the anesthethic, that it works splendid; there is no sensation.

Dr. Greenlaw.—I have been using a local anesthesia for sometime. By dipping the needle in carbolic acid first it relieves pain.

Dr. Clyde Payne.—I am pleased beyond expression at hearing so much in favor of my clinic. I will endeavor to explain what caused me to select the formula. Cocaine is the base of nearly all local anesthetics. There are a great many forms of cocaine. Cocaine being worth $5 an ounce makes it worth counterfeiting; hence, there are a great many counterfeits on the market. I have used all the different brands from the reputable houses, but from none do I get results the same as from Merck's. In regard to the solution, I used 10 per cent. and got some ill physiological effects. I stopped it and tried 5 per cent., with fair results. In one particular case the patient turned pale and showed the ill-effect of cocaine. I came to the conclusion, as it depressed the heart, that there must be some excitant. I looked around for a heart stimulant. If you use digitalis it must be made fresh. When it comes in contact with the blood it loses its alkalinity. Nitroglycerine is not affected by the blood. It stimulates the heart and counteracts the effect of cocaine. Cocaine contracts the capillary blood-vessels; nitro-glycerine dilates them. If you use ordinary glycerine the overheating in its production makes it irritating instead of soothing. There is only one chemically pure glycerine on the market—a German double-distilled. When you force glycerine into any part it anesthetizes that part and localizes it. In inserting the needle, press the part, have needle flat and keep the anesthetic ahead of the needle. After inserting as far as you can, you use force on the piston, and you not only get to the apex but you also get infiltration. In anesthetizing part at the end of the root, you push flat side down in between tooth and root, and if the pericementum is in good condition it will act all the better. When conditions are healthy there is quite a space in this cushion, and you can force the anesthetic to the apex of the root. You must keep away from pus socks if there is an abscess. If you get in, the sack being full, it overflows, gets into the tissue and makes trouble. Keep out of the soft tissue; keep in the mucous gum.—*Proceedings of Stomatological Club.*

ARTICLE III.

SYSTEMIC MEDICATION FOR THE RELIEF OF SENSITIVE DENTINE.

Read before the Washington State Dental Society by Dr. B. W. Cassil, Dayton.

The tendency of the times seems to be toward the relief of acute pain in all operations for the relief of human ills. That this is as much true of the dental, as well as other branches of the medical profession, is apparent to all.

For this purpose, local and other anæsthetics have been introduced and given careful attention by the profession with more or less satisfactory results, where conditions are severe enough to warrant their use.

There are conditions however occurring constantly in the experience of the dental practitioner where the use of the general anæsthetic is inadmissible. In fact, as yet, no local anæsthetic or treatment of any kind has been found which would give the desired results without some injury to the organs to which they are applied, and this is sensitive dentine.

Failing in these directions to produce the desired results, attention is of necessity directed to systemic medication for relief of one of the most potent reasons for the loss of dental organs, or their neglect until the pulp lesion comcompels attention.

Much has been done by general practitioners of medicine in this direction, in conjunction with the intelligent dentists in the way of prescribing tonics, nervines, or sedatives, as the case may be, to prepare patients for the ordeal which seems to be so much dreaded by our clientele, but none so far, have recommended a specific which will act promptly, and come as near producing uniform results a salicylate of soda.

Attention was first directed to the drug for use in dental practice by an article in one of the dental journals, o systemic treatment of pyorrhœa. Little attention was given the subject at the time however. A few days later a lady called to have her teeth examined, on attempting t examine a cavity on the cervical margin of a bicuspid, th dentine was found to be so excessively sensitive that sh could not bear the slightest tough of an ordinary searc point. An appointment was made with her for the following week, at which time after applying the dam, variou local anæsthetics previously found to be more or less efficient were tried without avail in this case. Here seemed t be a case which was absolutely beyond relief, except wit the forceps, the cavity being a very small one, and the set of teeth unbroken, this was not to be thought of. While considering the case, the article on Salicylate of Soda came to my mind. I began to diagnose the case from a systemic standpoint. It occurred to me as very strange that the dentine in this case should be so much more sensitive than ordinarily, unless there could be some good cause assigned for it, especially as the decay was so slight.

The writer of the article before referred to claimed that there was doubtless a systemic cause for pyorrhea which was closely allied to inflammatory rheumatism, and wa produced by uric acid in the circulation.

The idea suggested to me was, that as the dentine is of similar structure to that of the bones, why should not rheumatic conditions affect the dentine as well, and be responsible for much of the soreness, therefore I asked my patient if she was subject to rheumatism and the reply was yes: "Yes, sir, more or less all the time."

Having had a good deal of experience with Salicylate of Soda in treatment of rheumatism in hospital practice in the east, and as it was nearly invariably successful, I determined to try it in this case for relief of sensitive dentine.

A prescription containing four drachms Salicylate of Soda to be taken in 15 gr. doses, four times per day was given her and she was dismissed. Four day's later she returned, burs could be run at a good speed with no complaint of pain. You can rest assured that my patient was more than pleased although she complained that the medicine was rather unpleasant to take, and produced a slight nausea at times.

Such flattering success in this case determined me to continue the use of the drug whenever an operation sufficiently painful to warrant it was found.

Meeting a young girl on the street a few days after the first trial, for whom about a year previous I had been compelled to place cement fillings in the upper incisors, with very slight excavating, due to sensitive dentine, suggested her as another good subject to prove the qualifications of Salicylate of Soda, for a place in our list of remedies. She called at request and on examination the dentine was found to be as sensitive as before. The same prescription was given her with the injunction to report at once if she noticed ringing in the ears. She returned the next morning and remarked, "That stuff of yours has set a whole nest of bees going in my head," whereupon the dose was reduced to 10 grs. three times a day, and finally to 10 grs. twice per day, when ringing ceased. After the fifth day the patient was placed in the chair and the cavities excavated easily, the only complaint of pain being, at one or two points near pulp, and that but slight. Complaint being again of nausea, I desired to make a combination that would give results and still have no objectionable features if possible. Knowing Salicylate of Soda to be soluble in water, aqua peppermint was first tried, not only from the fact of its so perfectly disguising the taste of most drugs, but also for its efficiency in relief of nausea. This mixture did not quite suit me, so syrup of ginger was added to improve the flavor, as well as for its stimulating qualities.

The formula with which the best results are obtained is Salicylate of Soda 4 drachms, Aqua Peppermint 1 oz., Syrup of ginger 1 oz., given in teaspoonful doses, this gives us 15 gr. dose S. of S. Since using this formula there has been no complaint of unpleasant effects of any kind.

No set formuia can be given for all cases, however, one case having been met where 20 gr. four times a day for a week were used, and it may be necessary to prescribe as much as 24 grs. per dose before getting the desired results.

This treatment is also effective for relief of facial neuralgia with almost universal success on the theory that neuralgia is due to rheumatic influences.

From my experience already with this drug I am satisfied that a remedy has been introduced that will prove invaluable in our practice, permitting a great many cases to be handled in a manner satisfactory to ourselves and our patients, which heretofore we have been obliged to patch up in a merely temporary way, to allow the patient to carry the teeth a little longer. Each of us will have to be guided by his own judgment and the conditions of the case, and satisfactory results will be assured.—*Pacific Dental Journal.*

ARTICLE IV.

DR. L. P. HASKELL, ON DENTAL PROSTHESIS.

Delivered before the Washington State Dental Society, 1895.

I congratulate the younger members of the profession in having commenced their practice in these days of diffusion of knowledge and greater liberality and esprit de corps in the profession than in the early days of cruder methods, when the secrets of the laboratories and offices were kept religiously guarded.

When I commenced dentistry plaster was just beginning to supplant beeswax for the taking of impressions, and I immediately adopted it and consider it the only reliable ingredient for that purpose. At that time tin was still used for the manufacture of dies, but after experimenting with type metal, platinum, zinc and tin, even having brass castings made in brass factories, I was induced to try Babbit's metal, and have continued to use it in the making of dies ever since. I found it was the only method that possessed the essential qualifications for dentist's dies: viz. sufficient hardness, toughness and smoothness. My formula for its manufacture is one part copper, two of antimony and one of tin. Some have found it serviceable to substitute silver in place of tin, but I consider the above formula the safest proportion, as more tin renders the dies too soft and with less they are too brittle and apt to crack.

I always make my metal plates fit the mouth closely, and never have any difficulty in making them adhere prop. erly without an air chamber. I believe the use of the latter usually results in failure on account of subsequent changing in the process. In cases where the plate rocks over a hard palate I use a relief consisting of a thin film of wax.

I was practicing dentistry fourteen years before the introduction of vulcanized rubber. After using it some time I began to notice the changes produced by it in the absorption of the alveolar process, which I had never observed before its introduction. I attribute this change principally to the fact that rubber being a non-conductor causes undue retention of heat, resulting in a constant change in the process; while others attribute it to the fact that rubber prevents the formation of new tissue.

In a visit to Boston after a long absence, I had occasion to examine some very old cases of mine where I had used gold plates, and having been in use for forty years, and found no change in the process whatever; while in about five years' use of vulcanite very marked changes have taken place. I very much disapprove of the use of rubber for permanent work, particularly in full upper cases, where the air cannot circulate and there is considerable atmospheric pressure. However, in the case of the lower jaw the same objection does not hold good; and in many of such cases rubber proved to be the best thing that could be used. Since the introduction of aluminum I do not see any good reason for the use of rubber for permanent work and believing that patients could be made to see the false economy of ordering it, especially where, in many cases they are willing to pay the highest price for everything else they wear. Nothing improves the appearance so much as artificial teeth, to say nothing of the increased comfort and convenience; and I can only account for the purchase of a cheap denture in such cases from the fact that the plates, not being visible, the love of ostentation of such people was satisfied as long as the teeth—the only portion of the work visible—presented a respectable appearance.

The principal objection to the old aluminum extracted from clay was owing to the presence of iron, which caused it to disintegrate and become porous; but by reason of the new process of manufacturing aluminum by electricity that objection is removed. I find no apparent change in plates made from this metal, and they appear to wear as well as plates made from any other metal. It is a very beautiful metal to swage, and when used pretty thick makes a very stiff, unyielding plate; while under the old process of etching the rubber did not seem to adhere as well to the aluminum as to gold plates. All aluminum plates should be swaged, as I do not believe it is advisable to cast aluminum plates, owing to the fact that no practicable method of soldering it has been discovered; and it is impossible to reduce the fitting of the plates to an exact science, especially where allowance has to be made for shrinkage, alterations could be more readily made on swaged plates.

In response to a question by Dr. Andruss as to the effect of alkaline solution under heat upon aluminum, and as to whether it produced a metallic taste in the mouth, Dr. Haskell replied that the heat which could be taken into the mouth would not affect it, and that any metallic taste complained of in the mouth could be probably attributed to idiosyncrasy of the individual, as he had never found any greater complaints of that kind in his experience with aluminum than with platinum or other metals. I strongly advocate the use of platinum as a substitute for rubber. I make it a practice to induce patients, if possible, to have gold plates, and failing in that I recommend aluminum in preference to rubber.

In swaging any metal, whether gold or platinum, I always make it a practice to cut the plate, and thereby save considerable time in swaging, especially in cases of considerable undercut. I prefer to make a straight cut, instead of the old fashioned V shape, as I believe it strengthens the plate to lap the edges over and solder, and there is no objection to it. In case of very heavy undercuts, to avoid the tearing away of the counter-die and plate, I swage very thoroughly as far as possible, then burnish those portions of the plate not swaged, with a burnisher.

For the purpose of annealing I do not believe in the use of oil but prefer using a Bunsen Burner and rubbing the plate over with the butt end of a match until it produces a slight color, from charring.

In cases of very heavy undercuts, where it is impossible to mould, I overcome the difficulty by using double cores, or a core in two sections, of plaster and asbestos; which, being more fibrous, will hold together better than anything I have been able to discover for the purpose of mixing with plaster.

In lower cases, having a very thin alveolar ridge, to avoid breaking of the ridge, a little sand is pressed under the undercut, even though the counter-die may not fit the die, and then swage as far as it will go, then burnish to place—in this way I am able to get a perfect plate.

After long experience I find that I can fit the mouth better with metal than with rubber plates; the latter is apt to warp and contract across the heel of the plate during vulcanizing, which causes them to bear harder on any ridge there may be in the roof of the mouth. I do not believe in scraping at the posterior portion of the plate unless the tissues are soft on either side of the palatal ridge in the center, and then only in those soft places.

A peculiarity about the lower jaw is the fact that the teeth on the left side are higher and longer and fuller than on the right. In articulation the anterior teeth should be arranged symetrically regardless of the position of the others, for the reason that they give expression to the mouth, and in arranging the upper teeth it is often difficult to get the teeth on the left side far enough back, owing to the lower teeth coming up too high, this peculiarity is confined to the left side and is not the case on the right.

It is often the case that when the teeth are all extracted the left side of the lower jaw diverges further from the meridian line, and that could be overcome by setting the teeth farther in over the ridge on the left side than on the right. I believe there are more failures from faulty articulation in the case of dentures of full upper plates than from any other cause. The six anterior teeth should never be allowed to meet—a space should be left not only for present but for future changes when the teeth and jaw come close together in the course of time.

A patient should never be allowed to see or examine the denture until everything is fully articulated.

In the use of articulating paper I obtain the best results by getting the patient to bite rapidly up and down instead of grinding on the paper, and the articulation should be so arranged that the pressure will come on the bicuspids and the first molar. I have known of instances where the wisdom teeth or second molar of the lower jaw stood at an angle of 45 degrees, and in the articulation of an upper set those teeth should never be permitted to come together end for end as it will cause crowding of the plates forward. In case the lower teeth are far enough forward to permit it, I recommend the dropping of another tooth behind them from above in order to throw the crowding backwards instead of forwards. I believe articulation to be one of the most important branches of prosthetic dentistry and the most likely, if neglected, to produce an unfavorable impression on the patient by the teeth not coming together properly.

In case the plate is found to press on the posterior margin of the mouth I recommend the grinding of the articulation of the last molars rather than the filling or alteration of the plate.

In reply to a question of Dr. Price as to the proper course to pursue in order to make an upper denture satisfactory, where there were no lower posterior teeth remaining in the mouth, the Doctor replied, "I recommend putting some in as I consider it absurd to have a complete upper set with no lower posterior teeth as to have a two-wheeled vehicle with only one wheel, especially as the primary object in inserting artificial teeth is for the purpose of mastication."

In reply to another question as to the practicability of attaching a full bridge to the cuspid roots, he replied that in most cases where full dentures were attached to 2, 3 or 4 roots, I have always found them unsatisfactory.

In all cases of bridges and partial artificial dentures, the pressure of the articulation should be thrown on the natural teeth, because, if thrown on the crown or bridge it would have a tendency to crowd the plate into ths gums and cause additional absorption and discomfort.

In lower plate work, in case one good lower tooth remains in the mouth it should by all means be retained as affording a good anchorage, for the lower denture, no matter what tooth it is. I do not believe, however, that there is any use in retaining the superior cuspids if all the other teeth are gone, because a more successful denture could be inserted with a full plate than with a partial one of this kind. I believe dentists are very foolish in advising patients to retain those upper cuspids under the idea that they tend to preserve the contour of the lips and face. This I do not believe to be the fact, on the contrary I believe they are a source of infinite trouble to the patient and tend to weaken the upper plate.

In reply to a question by Dr. Wright, Dr. Haskell said: "In swageing any metal I always oil my dies to prevent, as far as possible, the baser metals adhering to the plate, and before annealing wipe off all trace of the baser metals. After annealing and partial swageing, wash the plates in sulphuric acid and boil them so as to peel off the base metals. I prefer the use of cotton-seed oil for mixing modeling sand, to that of water, the steam from which caused the formation of air bubbles in the metal cast."

In reply to a question by Dr. Holmes, Dr. Haskell said "In cases where the teeth are all gone on one side I would for the purpose of making a perfect clasp, advise the separation of the teeth, and if a considerable space is required I would, in order to prevent the induction of decay in the teeth, advise the extraction of one sound tooth, if necessary, to secure a firm hold for the artificial teeth. I believe this to be for the best interest of the patient in the end.

I would advise never to put wet borax on hot teeth as it is liable to crack the teeth. I greatly disapprove of the too general use of cross pins by dentists. In my practice I use the so called straight pins exclusively except in some special cases of bridge-work, as I believe they are much stronger and less liable to break. In chosing artificial teeth select bicuspids and molars with the long lingual cusps. For clasp metal I use gold alloyed with platinum, 16 to 1, or a pennyweight of platinum to an ounce of gold.

As a proof of the fact that nature works according to geometrical rule or law in the arrangement of the teeth, I wish to mention the discoveries of Dr. Bonwill in comparative anatomy, and the result of his investigations, covering a wide field and including examinations of many thousands of skulls, of pre-historic as well as modern races. Dr. Bonwill has discovered the law underlying the formation of the teeth to be that in all perfectly arranged jaws the six anterior teeth formed the arc of a circle, the radius of which circle could be determined by the width of the central, lateral and cuspid teeth it making no difference whether the teeth were wide or narrow. In any given case by taking the measurement of the central, lateral and cuspid teeth, and forming a circle of which that would be the radius, it will be found that a line drawn through the center of that circle would come through the center of the second bicuspid; a line drawn across the posterior margin of the second molar would coincide with a line drawn across the posterior periphery of that circle. The third molar does not seem to cut any figure in the economy of nature so far as the arrangement of the teeth is concerned. Dr. Bonwill's general law enables him, by having as a basis any single tooth in the upper jaw, to tell with certainty, from the width of that tooth what would be the corresponding width of every other tooth.

I have never found this rule to fail in any natural set of teeth; and acting upon that rule I always form a brass disk according to the measurements of the six anterior teeth, and adjust the articulation according to that circle. In the arrangement of artificial teeth I find it an excellent guide; the edge of the circle coming on the cutting edge of the six anterior teeth and also on the first bicuspids.

Dr. Bonwill's law does not apply as to artificial teeth in regard to the centre of that circle coming through the center of the second bicuspid; because in artificial teeth it was very rarely, if ever, that one could find a set of teeth where the bicuspids and molars were in proper proportion; and this has been a source of exceeding annoyance to me in the course of my practice. I often find a set of very wide incisors in connection with little, narrow, insignificant bicuspids and molars.

In arranging a set of teeth for an old person whose teeth have been extracted for many years, the processes are usually absorbed so that there is practically nothing left, and the lower jaw projects forward, its radius seeming to be shortened; therefore it is a very difficult matter to arrange the teeth in such cases, as there is no rule to go by and no basis to start from as to the exact position of the teeth.

In arranging the lower set to the upper set I always begin with the second bicuspid, arranging the fronts but partially, the main thing being to secure articulation of the bicuspid and molar, and then the anterior teeth can be articulated in the best way possible. Sometimes they will be found too wide for the space allotted them, and in that case they can be lapped or crowded in somehow. The main thing is to articulate the bicuspids and molars properly. The chief difficulty in articulating bicuspids and molars is owing to the fact that the articulating surfaces are not made to come together, it being necessary to grind some of them to make them meet. The lingual cusps of the bicuspids and molars should be shorter than the buccal cusps of the lower, and vice versa. I frequently find instances where the lingual cusps of the superior bicuspids or molars are longer than the buccal. I follow Dr. Bonwill's method of using the articulating circle by grinding deep, broad grooves in the bicuspids and molars so as to bring the surfaces together, and I believe that there is no other method that can be followed with satisfaction until it is possible to induce dental depots to furnish artificial teeth more in accordance with nature.—*Pacific Dental Journal.*

ARTICLE V.

FROM GERMAN DENTAL JOURNALS.

BY CARL E. KLOTZ, L. D. S., ST. CATHARINES, ONT.

THIOFORM.—By Dr. Edmond Prigge, dentist, Frankfort a M.—It is not to be denied that, notwithstanding the disadvantages of iodoform, we are always called back to its use again, as so far we have not found any drug that possesses all the good qualities of it without having also some of the bad. Iodoform is poisonous, and has a very disagreeable odor which is offensive to the patients. Salicylic acid, boric acid, bismuth, etc., have been tried, to replace it, but none would answer. A substitute has now been found which has none of the disagreeable qualities. It is called Thioform. The first experiments with it were made by Vet. Surgeon L. Hoffman on animals with remarkable results, which were followed by experiments by a number of physicians in their practice. I decided to try it and test its usefulness in dentistry. My first trial was with a lady patient, 35 years of age, who was troubled with empyem of the antrum, caused by the root of a first molar. When the patient came to me she complained of headache and occasionally a discharge of pus from the nose. I extracted the tooth and enlarged the opening into the antrum where there was quite a discharge of pus, and syringed the cavity with carbolized water, 1-100, till there was no more pus. I now blew into the antrum about 1 gm. of thioform powder with a chip-blower and closed the opening. The following day I found no pus in syringing the cavity with carbolized water. This treatment was kept up for several days. On the eighth day I left off syringing and left the powder in the antrum, and in twelve days had a complete cure. The second experiment was on the lower jaw of a non-commissioned officer of the regiment stationed here. He had a fistulous opening opposite the lower first molar which had been there for several years; it had now broken out through the cheek. I extracted the offending tooth, and carefully removed the degenerated parts around the cheek fistula, made two incisions according to Jane's method and put in two stitches, treated with thioform powder and put on a bandage. After two days I removed the stitches and in eight days had a complete cure. My next trial was on pulp tissue. For this purpose I made a paste of

Thioform . . . . 2 o.
Glycerine . . . . q. s. f. p. Mollis.

With this I filled the root canal of a lower second bicuspid of a young lady, after I had carefully removed the pulp and covered it with a temporary filling of gutta percha. After seven weeks I removed the temporary filling and could not detect the slightest trace of a disagreeable odor, nor had the patient experienced any pain. The canal was now filled with chl. zinc cement and the cavity with a gold filling. With this same patient I had a still more venturesome trial, which has so far also proved successful. I amputated the pulp of an upper second molar according to the Herbst method, but before I covered it with tin foil I placed a little thioform paste into the pulp chamber, covered it with tin foil and filled the cavity. In this nanner I have treated a number of patients since, and am well satisfied with the results. The principal advantage of the thioform is that it is not corrosive or poisonous; it is a hæmostatic and slightly anæsthetic. In other respects it has all the good qualities of iodoform.

A CASE IN PRACTICE.—Removal of a supernumerary canine by Ph. Zundel. Patient, a strong young man of 22 years of age, a baker by trade, came to the office with the left side of his face badly swollen. Two years previous he had the left central and lateral extracted and replaced by artificial teeth on a vulcanite plate. Excepting the loss of the teeth there was no further irregularity to be seen. According to the patient's statement, he has had this swollen face more or less since he had the artificial teeth inserted. My first thought was that there might be part of either tooth left in the alveolus, causing the inflammation, but this was not the case, for upon closer examination I found marked fluctuations of the tissues. I lanced the inflamed part, and out of it flowed a greenish liquid that had an odor somewhat similar to peppermint. After the wound was thoroughly disinfected and probed, I found a smooth bony substance in a horizontal position, about 1½ cm. in length. In forcing an elevator into the opening a supernumerary canine was removed. The wound was treated with antiseptics, and healed in fourteen days.—*Monatsschrift Deutscher Zahu Kunstler.*

NERVOUS ODONTALGIA.—Dr. Gretner has used of late in a number of cases of violent toothache the following remedy with very good success:

R	Antefebrin . . .	0.20
	Phenacetini . . .	0.5

M. f. pulv., D. t. dis No. 6. S. Three times daily, 1 powder.

Particularly satisfactory were the effects of the powder with a patient in the second month of pregnancy. As is known, toothache at this period is remarkable for its stubborness. She had suffered excruciating pain for three days and three sleepless nights. After taking the first powder she had relief and slept all night, and after the second powder the following day, the pain had entirely left, and no recurrence since.

PORCELAIN AMALGAM CROWN.—Dr. Nitus Nuki, of Temesvar, Hungary, says: A very simple bicuspid crown is made as follows—Prepare the root same as for any crown, take an impression, select a plate tooth and grind to fit the model. Prepare amalgam same as for filling a tooth, but rather more plastic, pack between and around pins and pivot, building up the inner cusp; when hard, polish and cement to place.

NERVE PASTE.—Dr. Diack considers morphia in a nerve paste ineffective, likewise tannin, aristol, iodoform, cocain or oil of cloves. He adds belladonna ext. to the arsenious acid, two parts of the former to one of the latter, and mixes them into a paste with glycerin. Belladonna acts on the sensitive nerves, and no pain follows the application of the paste.

FORMULA FOR ODONTOL.—

R.	Cocain Hydrochloric,	
	Aq. Laurocer,	
	Tinct. Arnica	aa. 1.00
	Liq. Ammon. Acetic . . .	10.00

Apply on a pellet of cotton in the cavity of the tooth.

ANOTHER TOOTHACHE REMEDY.—

Acid Carbol. Crystals,	
Cocain Mur,	
Menthol	aa. 1.00
Glycerine	20.00

—*Zahuarstliches Wochenblatt.—Dominion Dental Journal.*

ARTICLE VI.

DIED IN A DENTIST'S CHAIR.

Mrs. Charles Grier died yesterday afternoon shortly after three o'clock while in a dentist's chair in the office of Billings & Sherraden, dentists. She went to have teeth extracted, and was put under the influence of chloroform. It was from the effects of chloroform that she died.

Mrs. Grier went to the office shortly before 1 o'clock, and was attended by Dr. Sherraden. She had two teeth pulled and then said the operation pained her too much, and said she wished to be placed under the influence of an anæsthetic. Dr. Sherraden told her that he would not place her under the influence of any drug, and tried to induce her to continue the operation. Dr. Arnold, who has an office in the building, was called and examined Mrs. Grier. He told her that she could safely take chloroform, but refused to administer it. Then Mrs. Grier asked to have Dr. R. C. Moore, who had attended her in the past summoned.

Mrs. Grier waited in the office until two o'clock, when Dr. Moore arrived. He examined her and advised that she be placed under the influence of chloroform by means of an Eismark inhaler. One tooth was extracted by Dr. Sherraden, and, as is usual, the pain brought the patient to consciousness. Dr. Moore again placed the inhaler to her face and the dentist extracted another tooth. Instead of struggling as she did before Mrs. Grier lay perfectly quiet, and Dr. Moore, who was holding her hands, noticed that she stopped breathing. As this is not unusual in such cases, Dr. Moore was not alarmed, and told Dr. Sherraden to hasten the extraction of another tooth, thinking that the pain would bring the woman to consciousness. The tooth was extracted, but after giving two or three gasps the woman lay dead.

This is the statement made by Drs. Sherraden & Moore. "I have placed hundreds of patients under the influence of chloroform in thirty years' practice," said Dr. Moore last night, "and this is the first time I have had a fatal result. If I had treated the woman in the old way, and as many physicians do now, by placing a handkerchief saturated with the drug under her nose, or dropped the drug from a bottle, I might blame myself, but I did not do that, and have not done so for some time. I used the latest method approved by physicians, the Eismarck inhaler. Moreover I used a very small quantity of chloroform, less than a teaspoonful. I have attended the woman and never found that she was affected with heart disease, and I found her in a perfectly healthy condition when I examined her before the operation. I am anxious to have the case investigated, as I cannot see where I can in any way be blamed."

The inquest over the remains of Mrs. Grier will be held this morning at 11 o'clock. A post mortem examination may be held.—Omaha Daily, August 2d, 1895.

(The cause of this death—judging from the evidence herein contained—would seem to have been syncope with partial narcosis. Had the administrator on the discovery that the patient showed extreme palor and that the functions of life had in a measure ceased, quickly held the patient up by the heels and thrown cold water in her face, or had quickly applied the galvanic battery, she might be still living. But any delay in such cases is very likely to bring fatal results. By describing the effects of the anæsthetic to the patient before administering, ofttimes prevents the syncope as caused by fright. Ed.)—*Microcosm.*

ARTICLE VII.

CARIES OF JAW FROM IMPACTED WISDOM TOOTH.

BY R. E. SPARKS, KINGSTON, ONT.

E. L.——, aged about 27, was admitted to Kingston General Hospital, June 12th, 1895. He had a large swelling at the angle of the lower jaw, left side. I was asked by the attending surgeon to see the case. We found a slight discharge from a small opening opposite the angle of the jaw. He could not open the mouth more than a quarter of an inch at the incisors. With a distender we forced the mouth open to about half an inch. We found teeth good, but wisdom tooth impacted. The history of the case as he gave it to us was, that about March 1st he felt gnawing pains in the region of the angle of the jaw. These became more intense, passing over the side of the head. About the middle of April the jaw swelled, and by May 1st was locked. Consulted a dentist, who diagnosed an impacted wisdom tooth, but said he could not extract it until the swelling disappeared. He visited a doctor, who recommended poulticing. This was done for a week, when the swelling "broke" and the muscles relaxed, allowing him to open his mouth pretty freely. Exposure to cold brought on a relapse. Jaw again became swollen and locked. He again consulted his doctor, who at once sent him to the hospital.

On June 14th an anæsthetic was administered and an exploratory incision was made from the angle of the jaw forward almost to the facial artery. It was found that caries had attacked the jaw opposite the wisdom tooth. This was thoroughly scraped and washed out. The mouth was pried open and the second and third molars removed; the second merely to admit of the removal of the third. It was found that a channel existed from the socket of the wisdom tooth to the external opening just made. The wound was stitched, leaving a drainage tube in. He was dismissed on July 4th. We saw him on August 31st. Swelling entirely disappeared; mouth opened quite freely scar very slightly noticeable. Altogether a very satisfacfactory result.—*Dominion Dental Journal.*

Obituary.

DR. JAMES E. GARRETSON.

JAMES EDMUND GARRETSON, A. M., M. D., D. D. S., professor of anatomy and surgery in the Philadelphia Dental College and dean of that institution, died at his home in Lansdowne, Pa., on the evening of Saturday, October, 26, 1895.

Dr. Garretson was born in Wilmington, Delaware, October 18, 1828, and commenced the study of dentistry with Dr. Thacher, of Wilmington, in 1850. He began practice in the neighborhood of Woodbury, N. J., and later came to Philadelphia, where he entered as a student in the Philadelphia College of Dental Surgery, the progenitor of the present Pennsylvania College of Dental Surgery. He received his degree in dentistry on February 29, 1856, and entered upon the practice of his profession in Philadelphia. Among his classmates was his brother-in law, Dr. J. Foster Flagg, for many years his colleague in the faculty of the Philadelphia Dental College.

He began the study of medicine at the University of Pennsylvania, graduating from that institution in 1859. The same year he was married to Beulah, a daughter of George Craft, of Upper Greenwich, N. J. At the organization of the Philadelphia Dental College in 1862, Dr. Garretson became a member of the faculty as professor of pathology and therapeutics, but before delivering his course of lectures he resigned to accept the position made vacant by resignation of the late Professor D. Hayes Agnew in the Philadelphia School of Anatomy, in which school Dr. Garretson had been a demonstrator for five years. He continued in charge of the school until 1864, when he gave up that practice and entered the Philadelphia Dental College as professor of anatomy and surgery. During the war of the rebellion Dr. Garretson for a time was in active military hospital service. In 1869 he was appointed oral surgeon to the hospital of the University of

Pennsylvania. In 1880 he became dean of the Philadelphia Dental College, which position he faithfully and acceptably filled until his death.

In the special field of his activities Dr. Garretson filled a unique place. He was the pioneer in a new department of surgery, and the creator of its technique. He brought to the practice of his life-work the skill and manual dexterity of the trained dentist, to which was added the broad culture and intimate knowledge of his subject required by the educated surgeon. With this educational equipment grafted upon his rich natural endowment of attractive characteristics, a combination resulted which easily accounts for his phenomenal success and wide reputation as a surgeon and as a teacher.

Broadly speaking, Dr. Garretson may be said to be a striking example of the self made man. His love for his work, his faith in and respect for the possibilities of development in dentistry, and his ambition to secure for it the status and recognition it deserved, have borne abundant fruit in the example of success which he has left as a heritage to his profession.

He realized the crudity which characterized the method of performance of the earlier operations done upon the head, face and jaws; he saw that the special training and many of the operative methods of the dentist were, with suitable modification, directly applicable to surgery within his selected territory. Grasping this great principle and putting it to thorough practical test, he soon found that he had struck the keynote to success. The whole complexion of his operations, whether viewed as to their technique or as to the character of the results, differed essentially from the work done by any of his predecessors and the majority of his contemporaries. His work was distinctly conservative in character. He kept in view the importance of the cosmetic feature of his results, and as a consequence his operations were designed and done with a distinct purpose to avoid to the utmost extent permanent mutilation.

It was his custom as far as possible in operations upon the jaws to perform them within the mouth in order to avoid external incisions, and he carried the development of this principle to the extent that he frequently operated for the removal of the entire superior maxilla through the mouth without external incision. His conservatism was further manifested in respect to the several tissues of the oral cavity, it being a cardinal principle with him never to remove healthy tissue that might in any degree help to bring about a normal restoration of function within the territory of operation. His operations upon the inferior maxilla always involved this feature so far as conditions permitted: Hence it was his custom to leave a thin basilar rim of bone and periosteum for inducing the reformation of a maxillary ridge to be utilized as a base of support for an artificial crown.

His success in operations of this character is in strong contrast with the results shown by the general surgeon who lacks the familiarity with dental methods and requirements possessed by Dr. Garretson.

The record of his results would be incomplete without a reference to his use of the dento-surgical engine in his operative procedures. That he should at once appreciate the applicability of the engine to bone operations was the natural consequence of his dental training. He was among the earliest, if not the first, to successfully make use of this very important and, in many operations, essential aid. He kept it in constant service, and its efficiency is everywhere reflected in the superior results attained by him in his operations, as well as in the performance of certain operations—especially those within the brain-case—that would be impossible for performance without it. The practical development of the surgical uses of the engine is inseparably connected with the record of his surgical work.

The permanent record of his surgical work is embodied in his greatest literary work, the "System of Oral Surgery." This book has passed through six editions, the first appearing in 1869 and the last in 1895.

It is in the last edition of this great work that the culmination of his endeavor to place dental surgery upon a parity with the officially recognized medical specialties is seen. The former editions exhibit the gradual evolution of a professional condition which began in toleration and has since grown into a just recognition.

Dr. Garretson's intellectual qualities were strongly characteristic. His pronounced penchant for philosophical and metaphysical study was one of the determining features of his life. This love for philosophical study manifested itself strongly in his writings, and in his lectures to his students. He possessed wonderful insight into the profounder psychic problems of life, and great facility in their interpretation and portrays to others. His fluency as a speaker, his intense appreciation of the divinity which doth hedge a man, his kindliness and sympathetic quality, often gave to his formal lectures and addresses an oratorical quality of high grade.

Dr. Garretson was a contributor not only to the literature of his profession, but to general literature as well. The earliest of his writings, so far as we have been able to trace, are a contribution upon "Dental Hygiene," and one upon the "Ether Question," published in the *Dental News Letter* in 1855. His writings consisted of a number of separate book publications, as well as of contributions to periodical literature. There have appeared in the *Dental Cosmos* upward of one hundred articles from his pen, besides a large number of unsigned communications published as Hints and Queries.

Apart from his ' System of Oral Surgery," he has published works as follows: "Brushland," "Hours with John Darby," "Thinking and Thinkers," "Odd Hours of a Physician," "Nineteenth Century Sense," and "Man and His World." These were written under the *nom de plume* of "John Darby."

Dr. Garretson possessed to a marked degree attributes of simplicity and guilelessness. He had a childish faith in the honesty of mankind; years never taught him even the shadow of a distrust or suspicion of his fellowman, which might have spared him much of the care and anxiety which clouded his last days.

The cause of his death was stated by his physician to be enteritis; many of his friends, however, believe that his death was hastened, if not induced, by mental anxiety caused by the difficulties resulting in the recent separation between the Philadelphia Dental College and the Medico-Chirurgical College. His death was preceded by profound nervous exhaustion, which increased to the end.

In accordance with his earnestiy expressed wish, his remains were incinerated at the Germantown Crematory, on Wednesday, October 30, and the ashes subsequently interred at the Friends' burying ground in Upper Darby—Dr. Garretson being a member of that faith.

The surviving members of his family are his widow and two daughters.—*Dental Cosmos.*

Editorial, Etc.

TO THE MEMBERS OF THE MARYLAND STATE DENTAL ASSOCIATION AND THE WASHINGTON CITY DENTAL SOCIETY—GREETING :—The most meagre account of the results of the Union Meetings of the Maryland State Dental Association and the Washington City Dental Society, in 1894 and in 1895, would include a marked advance in the prestige of these organizations in the world of Dentistry; an increase of knowledge through the presentation and discussion of papers of a high order on various subjects of enduring interest and the very gratifying reports thereof by the leading Dental Journal; an enhancement of mutual respect and of the professional spirit among those in attendance; the happy renewing of old and the forming of new friendships—this latter alone more than compensating to many their loss of time and expense.

Both organizations unhesitatingly expressed their satisfaction with the outcome of these meetings by charging the undersigned with the duty for arranging for similar meetings in Washington in 1896 and in Baltimore in 1897. In the arrangement of committees for the meeting in 1896, a complete list of which we append hereto, we have acted with consideration for the chief object—the accomplishment of much preparatory work with a view of making this meeting more successful than either of the preceeding. We have had to look over the whole field of probabilities and consider many matters not likely to be thought of by persons who view the scheme partially or from individual standpoints, and it is hoped and expected that not a single declination of assigned duty will be made.

We appeal to your professional pride to put yourself in touch with the general purposes of these meetings, and especially urge you to find your place in the plan of committees and to work with zeal and enthusiasm with your fellow-committeemen and this committee, believing that by such effort and co-operation our next meeting will be made memorable as the grandest achievement of our time-honored associations.

Every one is expected to contribute something, even if it be but an "incident of office practice," and; in order that a program may be printed in due time and this committee enabled to arrange for the orderly presentation of papers, clinics and committee reports, *every contributor, clinician and chairman of committee* SHOULD REPORT BY MARCH 15, 1896, to Dr. B. Holly Smith, Secretary Joint Committee.

Bear in mind that the full measure of success depends on individual, personal effort—YOUR EFFORT.

Fraternally,

T. S. WATERS,
756 N. Eutaw St. Baltimore, Md.
WM. A. MILLS,
122 S. Broadway, Baltimore, Md.
B. HOLLY SMITH,
1013 Madison Ave., Baltimore, Md.
WMS. DONNALLY,
1022 14th St., Washington, D. C.
J. H. P. BENSON,
1107 9th St., Washington, D. C.
A. W. SWEENY,
813 Vermont Ave., Washington, D. C.
Joint Committee of Arrangements.

COMMITTEES FOR JOINT MEETING OF MARYLAND STATE DENTAL ASSOCIATION AND WASHINGTON CITY DENTAL SOCIETY, 1896.

Publication and Voluntary Essays.—A. W. Sweeny, Chairman 813 Vermont Avenue, Washington, D. C.; H. M. Schooley, Metzerott Building, Washington, D. C.; Fanny Hoopes, Cor. Charles and Read Streets, Baltimore, Md.; A. P. Gore, Baltimore, Md.; A. Price, Baltimore, Md.

Anatomy, Physiology and Histology.—W. S. Twilley, Chairman, 309 N. Eutaw Street, Baltimore, Md.; C. J. Grieves, 720 N. Howard St., Baltimore, Md.; H. C. Thompson, 1113 Penna. Ave., Washington, D. C.; Jas. H. Harris, 857 N. Eutaw St., Baltimore, Md.; W. E. Diffenderfer, 931 N. Y. Ave., Washington, D. C.

Operative Dentistry.—C. M. Gingrich, Chairman, 608 St. Paul St., Baltimore, Md.; C. C. Harris, 857 N. Eutaw St., Baltimore, Md.; R. B. Donaldson, 1309 F. Street, Washington, D. C.; T. H. Davy, 336 N. Charles St., Baltimore, Md.; J. B. Ten Eyck, 1601 O St., Washington, D. C.

Prosthetic Dentistry.—J. R. Walton, Chairman, 700 10th St., Washington, D. C.; J. Hall Lewis, 1309 F St,, Washington, D. C. G. M. Smith, 1013 Madison Ave., Baltimore, Md.; F. M. Seebold, 1315 N. Y. Ave., Washington, D. C.; Geo. E. Hardy, 716 Park Ave., Baltimore, Md.

Dental Education, Literature and Nomenclature.—F. J. S. Gorgas, Chairman, 845 N. Eutaw St., Baltimore, Md.; Isaac H. Davis, 331 N. Charles St., Baltimore, Md.; W. L. Harban, 1407 N. Y. Ave., Washington, D. C.; A. J. Volck, 338 N. Charles St., Baltimore, Md.; G. L. Hills, 17th and H. Sts., Washington, D. C.

Pathology and Therapeutics.—L. C. F. Hugo, Chairman, 808 17th St., Washington, D. C.; D. E. Wiber, 717 11th St., Washington, D. C.; W. A. Mills, 122 S. Broadway, Baltimore, Md.; W. S. Harban, 1342 N. Y. Ave., Washington, D. C.; G. H. Claude, Annapolis, Md.

Crown and Bridge Work.—W. B. Finney, Chairman, 815 N. Eutaw St., Baltimore, Md.; T. S. Waters, 756 N. Eutaw St., Baltimore, Md.; G. B. Welsh, 1344 G. St., Washington, D. C.; S. G. Davis, 607 13th St., Washington, D. C.; F. W. Parker, 4th and E. Capitol Sts., Washington, D. C.

Orthodontia and Dental Appliances.—M. F. Finley, Chairman, 1928 I St., Washington, D. C.; Chas. B. Munson, 1324 N. Y. Ave.; Washington, D. C.; David Genese, 621 Calhoun St., Baltimore, Md.; S. C. Pennington, 327 N. Charles St., Baltimore, Md.; W. W. Bruce, 1307 W. Fayette, St., Baltimore, Md.

Oral Surgery.—P. E. Sasscer, Chairman, Waldorf, Md.; M. G. Sykes, Ellicott City, Md.; A. D. Cobey, 700 10th St., Washing-n, D. C.; Lewis Buffet, Easton, Md.; A. J. Brown, 14th St., near , Washington, D. C.

Anæsthetics.—L. L. Harban, Chairman, 1342 N. Y. Ave., Vashington, D. C.; R. W. Talbot, 1111 F. St., Washington, D. C.; . E. Cruzen, Cumberland, Md.; C. T. Lindsey, 1209 31st St., Washngton, D. C.; C. E. Duck, 112 W. Mulberry St., Baltimore, Md.

Hygiene.—H. W. Lakin, Chairman, Boonesboro, Md.; C. S. rindall, 421 N. Charles St., Baltimore, Md; W. M. Ash, 470 Florida Ave., Washington, D. C.; W. N. Coogan, 719 11th St., Washington, D. C.; C. W. Appler, G St., near 14th St., Washington, D. C.

Dental Legislation.—H. B. Noble, Chairman, 1324 N. Y. Ave., Washington, D. C.; J. L. Wolf, 1313 N. Y. Ave., Washington, D. C.; A. C. McCurdy, Towson, Md.; Richard Grady, 720 N. Howard St., Baltimore, Md.; Ed. Nelson, Frederick, Md.

STRANGE CASE OF A DEGENERATING HUMAN BODY.—A medical case of the greatest interest was presented to a clinic at the New York College of Dentistry last week, when Dr. F. D. Weise, one of the medical staff, introduced John M. Molanski, who is suffering from what is known in medical science as acromygatia. It is regarded as one of the rarest and most mysterious diseases to which human kind is subject.

Medical authorities differ as to the exact nature of the disease, some believing that it is not really a disease, but a form of physical atavism, or a tendency to return to the original species, or a reversion to the primary type of man.

Molanski is undergoing a bodily metamorphosis. His face is gradually being transformed from its natural appearance into a strong animal type, with protruding under jaw and overhanging brows, which a heavy beard and head of hair but partially conceal. His hands and feet are growing larger and larger, and are already taking on the appearance of those of a monkey. He suffers no personal inconvenience, and is daily engaged in his business of cracker manufacturer, at No. 23 Cherry street. His disease, if it may be so called, is not contagious, being only a state of retrogression. It is not more than nin years ago that acromygalia first made its appearance a was recognized. There are only twenty cases on recor and that of Molanski is the only one now known to be existence.—*N. Y. Herald*, Nov. 12, '95.

DENTISTS' GOLD.—The gold which is taken fro teeth which have been filled or which is filled or scrape from the gold used in making tooth crowns or new gol fillings is no inconsiderable item for a dentist to conside A dentist recently said that the sweepings from his carpe had netted him $35 in a single month. The little scrap of gold that remain after many operations are gathered i bottles and sold at a fair price to the dealers from whom the gold is obtained. In some cases the gold is mixed with some other metal, or with dust, but all of it has a commerical value. The price paid by dealers is, o course, much less than that asked for the sheets of gold bought by the dentists.

Gold used in dental operations is of several degree of fineness. Fourteen-karat gold has its uses in the making of tooth plates, and other finer gold to the valu of several hundred dollars at one time is not unusual with a busy member of the profession.—*N. Y. Tribune.*

Monthly Summary.

PROF. MILLER OF BERLIN has proved that the active cause of dental caries is due to Bacteria in the mouth. A boon to dentists is BORINE the IDEAL DENTAL ANTISEPTIC. In its natural strength it will devitalize the mouth in a quarter of a minute while it does not harm the delicate epithelium or injure the dentine, a fact which cannot be claimed for any other antiseptic, as BORINE is not only a thorough germicide and prophylactic but is also *Non-Toxic and Non-Irritating.*

MEN THAT SHOULD NOT BE TOLERATED IN THE DENTAL PROFESSION.—The man who is never tired of repeating to everybody, and at all hours of the day, that he has been practicing dentistry for forty years.

The code-of-ethics man who believes that all advertising dentists should be hanged and quartered.

The paper-reading fiend that on every available occasion comes up with a paper bristling with scientific terms and with all the longest words we have in the English language, yet in substance says nothing that all his hearers haven't forgotten before they left the dental college.

The man who discusses such papers with the sole object of seeing his name in print.

The dental society men who mutually admire and soft-soap each other at every meeting or convention. I would suggest that these men found a dental mutual admiration society and relieve us from the suffering of having to read so much trash in the dental journals.

The tortuous nerve-canal perfect-filling crank.

The man whose papers have been written by somebody else and are produced as his own.

The man who cries down bridge-work because he doesn't know how to do it.

The man who claims that no dentist should undertake to perform any dental operation till he can do it in the most approved manner. This reminds me of the old woman who wouldn't allow her daughter to go bathing till she had learned how to swim.

The man who never makes a mistake, and who has never had a failure to record.—Francis Eschauzier, San Luis Potosi, Mexico, in *Southern Dental Journal.*

FILLING CHLDREN'S TEETH.—Children's teeth should be treated in a human manner. Gain their confidence if it requires a dozen visits before doing a thing for them. Begin early with their temporary teeth. Up to four years of age, these are not very sensitive. I do not agree with the essayist, when he says give them coarse foods to masticate. Their little teeth are not capable of crushing hard substances. While the calcification of the roots is incomplete, they are not strong enough to bear the pressure, and after absorption begins, the edges of the roots have jagged, sharp points. They can not eat such food, and when given it, alone, they can only bolt it whole; and dyspepsia follows. When the sixth year molars erupt, the roots are in the same incomplete state. Do not fill these teeth with gold. You will break the child down and fail to preserve the teeth. And do not use amalgam, as the teeth are soft and will be discolored by it. Use the cements and gutta-percha, replacing when necessary. You will, in this way make a life-long patient for yourself, or some one else. Use every effort to save the pulps till calcification has been completed. If the pulp is allowed to be devitalized from neglect, or from your applications, before the roots are formed, the apex being funnel shaped, with the enlargement the wrong way, your applications or your filling material will go through, and you may have necrosis or other serious trouble. A knowledge of physiology, histology and embryology is necessary for the dental operator, if he would avoid serious blunders.—Dr. T. M. Allen in *Items of Interest.*

VARNISHING CAVITIES.—Dr. W. G. Browne, of Atlanta, Ga., in *Items of Interest*, advocates the use of a clear resin, such as damson, dissolved in chloroform to line cavities before filling. It will act as a non-conductor of thermal changes, an insulator against electrical influences, will prevent discoloration from oxidization of amalgam, will help to support frail walls to a limited degree, and is useful in starting gold.

PULP-CAPPING IN DECIDUOUS TEETH.—In case of accidental exposure in excavating, fill a little saucer-shaped cup of platinum with a paste of oxid of zinc with carbolic acid and oil of cloves, equal parts, inverting over the point of exposure. Fill the cavity with oxiphosphate. The cup prevents pressure; the paste sterilizes the exposed point and allows healing by first intention.—T. G. Perry, in *Southern Dental Journal.*

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ARTICLE I.

ANCIENT AND MODERN HYPNOTISM.

BY. W. C. ACHARD, GLOUCESTER, N. J.

Read at the regular meeting of the Truman Dental Society, April 4, 1895.

I will endeavor to give a brief history of hypnotism, a description of the peculiar phenomena accompanying it, and a few words regarding its application in dentistry:

Hypnotism, of which the student of medicine has heard a great deal during the last few years, is by no means the new theory that many consider it; in fact, it is the very oldest method of curing diseases.

There is a sect in Egypt which has practiced it for over 4,000 years. Later on we have the Mumo-Jumbo-men of Africa, the medicimen men of the American Indian, the "charmers" of India, the Roman sibyls and Greek oracles. Of the last named we have, foremost, the oracle of Delphi, where in Apollo's temple a priestess sat for hours on a three-legged stool over a chasm in the ground, from which rose vapors of sulphur. In due time she entered the somnambulistic state, and prophesied to the awed listeners. Among the Israelites we have the well-known story of the "Witch of Endor," But of all followers of this most wonderful art, the fakirs in India surpass in skill all European hypnotizers. It is there where the greatest cures of diseases are effected, although accompanied with much unnecessary mummery.

In the middle ages there were the witches, which, in most cases, were poor unfortunates who had more than ordinary power of "animal magnetism," (as Mesmes called hypnotism). Then came, in 1662, Greatrakes, an Irishman, and a distinguished soldier, who had a revelation in a dream that he could cure scrofula by the laying on of hands. He accomplished some remarkable cures, and was followed, in 1773 by Gassner, an ex-monk of Suabia who traveled through southern Europe, using Latin pharses in hypnotizing his patients. But it remained for Mesmer to demonstrate the existence of "animal magnetism" in the human body.

Friedrich Anton Mesmer was born in 1734. After studying medicine in Vienna, he began his researches in "animal magnetism" the result of which I will give in his own words. He says: "Through certain manipulations, such as touching, stroking—in a word—magnetizing, even simply by merely a strong act of the will, one can produce this power in persons, impart it to others, and cause the most marvelous and wholesome effects." But he was considered a juggler by medical men, and expelled from Vienna, in 1774, for the alleged cure of a blind girl, (the case of Marie Paradise). He moved to Paris, and opened there his famous parlors. As it may interest you, I will describe his method for the treatment of all diseases: In the operating room there was, in the middle of the floor, a round tub, with a diameter of five feet, which was provided with a lid. On the bottom of it bottles were placed in such a way that the necks of some pointed to the center, and of others to the periphery. The tub was then filled with water to cover the bottles, and bent iron bars protruded through the lid. The walls were covered with mirrors, which, according to Mesmer's idea heightened the effect of the hypnosis. The patients were seated around the tub closely, and touching each other's knees, each holding one of the iron bars protruding through the lid, and also each other's hands. They were then connected by a cord, which was tied around their waists to assist in the passing of the "magnetic fluid." A mystic twilight pervaded the room, and the ear was charmed by sweet music of the harp and hiano, and also the soft melodies issuing from a harmonium, which Mesmer played with a master hand. After some time, the men and women sitting around the tub began to have peculiar sensations, as nervous twitchings, etc., and it was then that Mesmer entered solemnly, dressed in a fantastic robe of embroidered silk, holding in his hand an iron rod, with which he majestically walked around, stroking the patients. Some terrible crisis then ensued, the patients became hysterical, some having terrible convulsions. The most afflicted were then placed in a room, the floor and walls of which were padded.

It must be admitted that Mesmer really achieved some remarkable cures, which were discussed by the whole scientific world, and which led to the celebrated French Commission, appointed in 1784, by the government, to inquire into the nature of the new phenomena. This learned body of scientists included Franklin and Lavoisier, and the result of the investigation may be seen in the last words of this report: "Magnetism is one more fact in the history of human errors, and a great proof of the power of imagination." It may be stated, incidentally, that Mesmer closed his parlors to the commission, and they obtained their results from the parlors of one of his friends, Dr. Chas. D'Eslon. Mesmer then retired, and left France at the outbreak of the French Revolution, and died in England, in 1815.

Since then, hypnotism or mesmerism, as it was called has become an established fact. Prof. Charcot, the famous neurologist, of La Salpetriere, in Paris, commenced, in 1878, his investigations of the effect of hypnotism on hysterics, and demonstrated its different stages.

Another school is in Nancy, with Bernheim and Liebault at the head, and since July, 1886, there has been published a monthly journal, La Revue de L'Hypnotisme, with such contributors as Dr. E. Berillon, (the editor), Charcot, Luys, Voisin, Hack-Tuke, and others.

Hypnotism or mesmerism, of which somnambulism is the third stage, is that condition in which the will, self-consciousness, and sensations of the patient, are partially or entirely under the control of the operator, the subject losing, in most cases, all remembrance of what has passed during the hypnosis, but in which the subject, when hypnotized again, recovers the memory of the first hypnosis.

We will now consider the methods of producing hypnosis, which are as varied as the results. The ancient Egyptian sect, which I have mentioned, drew in the center of a white plate two triangles intersecting each other, and filled the figures with cabalistic words and signs. They then poured oil over the plate to make it shine more. After staring at the center of the plate for a few minutes, they entered the somnambulistic state. In Constantine, the members of the tribe of Beni-Aiaoussa sit down in a circle. After some time they begin peculiar swaying movements, until at last they spring up, their bodies dripping with perspiration, when with foaming mouths and in convulsions, they are absolutely insensible to pain, performing such feats as piercing their flesh with daggers, walking on hot irons, etc.

In Turkey, and Africa, there are to-day men who hypnotise themselves by staring intently upon their own umbilicus and pressing their tongue to the palate. After they are thoroughly under the hypnotic influence, they are put into an air-tight sack, which is sealed, then into a vault, which is also sealed and covered with earth, upon which grass is sowed. When the whole mound is covered with grass, the vault and sack are opened, and the man de-hypnotized, which is done by forcing open his mouth, pulling out his tongue, (which has settled into the pharynx), and then producing artificial respiration. Even after thus having been buried alive for months, the individual is said to be none the worse for his experience.

Other methods of producing hypnosis are to let the patient stare at a highly polished metal cap, or at a crystal, or any small object held at a distance of two or three centimeters before the eyes. A very good method, however, and one used by many operators, is Gessman's, which he describes as follows in his book, ' Magnetismus and Hypnotismus": "I sit down opposite the patient, make her close her eyes, take her hands in mine, so that the four thumbs are pressed against each other, tell her to be quiet, and to yield unresistingly to the first inclination to sleep. When she has fallen asleep—generally within ten or twenty minutes—I increase the sleep by some strokings over her head and chest, and try to induce her to talk. This I easily achieve by placing one hand on her head and taking one of her hands in my other hand, while I, speaking towards the pit of her stomach, ask, 'Do you hear me?' which question must often be repeated four or five times before I receive a very weak answer." Now is the time for further experiments. Gessman uses a preliminary test to ascertain whether or not the patient is susceptible to hypnotism. This he does by telling her that in his organization there is a strong evolution of electricity, which enables him to electrize persons. He lets her seize with both hands two fingers on his right hand, and after some time asks if she feels anything. If she is susceptible, she feels a peculiar crawling sensation at first, and then a numbness in the upper part of the body. Then he says in commanding tone, "Hold my hand tight—tighter—tighter still—well! Now you cannot let go my hand;" and really she cannot. Blowing on the hands and telling her that she is free ends the spasm.

Thus could be enumerated many different methods; i fact, every operator has his own. Persons of a weak w are usually more susceptible than others. Take a child f example: When you, as a stranger, look at it fiercely an tell it "do this," it will do it, for it recognizes the super will unconsciously, and that is only a mild form of hypnotic suggestion.

The methods of de-hypnotizing vary also very much You may use the same methods employed to revive a patient who has fainted. The simplest method is to blow o the forehead. Some persons are de-hypnotized by the simple command, "Awake!" Or, if you tell them that they shall count from one to ten, and awake when they say five, they will do so, and then keep on counting (not knowing why), or else let the word six die out on their lips.

The many phenomena of hypnotism have been divided into separate stages and classes by different authors. We will only consider Charcot's classification. He accepts the following three stages: First, the cataleptic; second, the lethargic, and third, the somnambulistic; which are described extensively by Dr. Paul Richter, a pupil of Charcot. The cataleptic state is produced by staring at some object, by a sudden strong light placed under the eyes, the sound of a gong, or a tremendous peal of thunder, also by sudden emotions, as fear, wrath, etc., when a person is for a shorter or longer time deprived of the power of speech or mobility. It also developes from the lethargic state when the already closed eyes are suddenly exposed to strong rays of light by the raising of the lids. It sometimes occurs before the narcotic state, during the administration of anæsthetics. A person who has been hypnotized is often very easily put in the cataleptic state by the clapping of the hands, the report of a gun, the sound of a gong, etc. An amusing incident illustrating this may be told here:

A woman had been suspected of stealing photographs from La Salpetriere, at Paris, but upon being questioned, she absolutely denied it. One day she was surprised, standing motionless at the place where the photographs were kept, with one hand stretched out grasping one. It seems that a gong was sounded in the next room to hypnotize a person there, and this woman almost immediately fell into the cataleptic state, which led to her discovery.

The characteristic of this state is immobility. The eyes are open and staring; respiration almost ceases; the limbs retain the most difficult positions in which they are placed; the skin is insensible to the strongest irritation, but the muscular senses, and those of hearing and vision partly retain their activity, and are susceptible to suggestion. Catalepsy ceases by a return to the normal condition, or by changing into the lethargic state. This state is produced by staring, or by continual pressure on the eyeballs. It can be produced from the cataleptic state by a simple closing of the eyelids. It is often preceded by epileptic phenomena, such as foaming mouth, asthmatic respiration of tetanus. The principle characteristics are complete insensibility of skin and mucous membrane, irritability of motor nerves and often insensibility to suggestion. Respiration is deep and quickened; limbs and body are perfectly relaxed. The muscles contract by stroking their tendon, and can also be excited directly. By opening the eyes the cataleptic state is reproduced.

The somnambulistic state is produced from the lethargic by a pressure or friction on the cranium. It is the one generally produced by magnetizers, and is characterized by absolute insensibility of the skin and mucous membrane. The senses are also sharpened, and the subject feels a certain personality, an ego, which may be illustrated by the following example: Before a patient in the cataleptic state are the requisits for shaving. They are touched by the operator and the patient at once begins to shave himself, but on being pressed on the cranium he stops and asks, "Why am I shaving myself?" I certainly do not need it!" On raising his eyelids he will go back to the cataleptic state and resume his shaving, but care must be taken that he does not cut himself, as he is absolutely insensible to pain. This state is produced by all methods which act on the imagination, and is especially susceptible to suggestion, which susceptibility is almost limitless, the actions of the somnambuld often bordering on the marvelous.

Among the physical effects of hypnotism we may name the muscular sensitiveness in different stages, varying from the flexibitis cerea in the cataleptic state, to the spasm and tetanus following it. Indeed, the rigidity of the muscles is at times so great that magnetizers produce the cruel experiment of suspending a person in that condition between two chairs, in such a way that the body rests only on the extremes of the head and feet; and to show this power over the subject, the magnetizer sits with his whole weight on the thus suspended body. This experiment is the more dangerous, as it may produce tetanus of the respiratory muscles. Analgesia, or entire insensibility to pain, seems to be a characteristic of all stages of hypnotism; with a few exceptions, in the somnambulistic state, where it is not only absent, but where the sensibility to pain is often very much increased. In this hyperæsthesia may be found an explanation why the somnambulist may recognize things with his eyes closed, or walk in the most dangerous places with absolute safety. The slightest touch with a hair is accurately localized by him.

In the cataleptic state, the sense of sight, hearing, smell, and taste, may be affected by suggestion, and very amusing experiments are made; as for example, one may give the person a green persimmon to eat, and tell her that it is a good apple, upon which she will enjoy it very much. Or on the other hand she may be given a good apple and told that she is eating a green persimmon, when she will immediately make a wry face and eject from the mouth what is stiil in it.

Among the mental effects, we have in the first place that on memory. It is a characteristic that the deeply hypnotized person upon awakening remembers nothing of what has passed during the hypnosis, which, however, can be controlled by the operator.

If, for instance, you tell your patient that you will remember everything that has passed upon awakening, he will do so. Very peculiar hallucination may be thus brought about. We will take an experiment made at Nancy, for illustration. Mrs. A. is hypnotised by staring. While asleep she is made to believe that three minutes after awaking she will go and embrace a little peasant woman who is sitting in the corner of the room, and whom she then sees for the first time. At the moment predicted she goes and embraces the woman, who is quite astonished at this unexpected caress. When a moment afterward she was asked, "What did you do?" she answered, "I? Nothing!" "Yes, you embraced that woman!" "No, certainly not!" She had already forgotten what she had done. From this it may be seen, that commands given during hypnosis will afterwards be carried out unconsciously, and this has led to many serious cases of criminal actions. We all remember the historic trial in Paris a few years ago, when a woman murdered a man in obedience to a command given her while under the hypnotic influence. And this brings to us the dangers and abuses of hypnotism.

I will only cite a few cases to show that the hypnotized can be injured by hypnotism, and that he can be used against or without his will as a tool for the service of crime. The sleep produced by hypnotism is not a normal one, but a nervous pathological state, and as all abnormal conditions of the body must injure it in time, it is obvious that rerepeated experiments on a sound and healthy patient are more or less injurious, and have a tendency to weaken not only the mind but the body. It may produce such a susceptibility that a subject will be brought immediately under the hypnotic influence by the slightest cause. There is a case on record in which a man became hypnotized on the street by a light from a carriage coming toward him, and he at once became cataleptic. Should that man walk on a railroad track and see the headlight of a locomotive, it may have the same effect on him, and he would lose his life.

The following is an experiment by Liegeois to prove that a person can be used for crime against his own will: A young man, 25 years old, while under hypnotic influence, was presented by Liegeois with a white powder, and told that it contained arsenic. "You will immediately go to your aunt; there you will take a glass of water, pour the arsenic into it, dissolve it well in water, and offer the poisoned drink to your aunt!" In the evening Liegeois was informed that the attempt at poisoning had been punctually performed. Thus we could enumerate many cases to show not only the good, but also the evils and abuses of this most wonderful art.

How can we apply it in medicine and dentistry? In medicine it has been used with great success all over the world. Insomnia, rheumatism, hysteria, etc., have been treated with its aid, and even amputations have been performed with absolute absence of pain. It may prove interesting to read Dr. James Esdaile's book on "Mesmerism in India," (London, 1846), in which, among other things, may be found a report of the medical and surgical cases treated by him with the aid of hypnotism.

In dentistry it has been used with more or less success. Many have been discouraged after the first few trials, but but those who have carefully and with untiring efforts sought the benefits obtained by its use, have been rewarded with greater success than they ever hoped for. We all have had patients whose fear and nervous excitement was so great that it was difficult even to make a proper examination of their teeth. Just there hypnotic suggestion may prove the greatest benefit. We can easily produce the first stage, and suggest quiet, absence of fear, and willingness to undergo any dental operation. This will aid the operator and patient very much, and hypnosis may be produced again after the operation, to suggest the same after the patient leaves the chair. An inexperienced operator may simply suggest a tranquil frame of mind for the time being and bad results may follow it. It is, therefore, essential to suggest that the patient shall feel absolute quiet and calm after the hypnosis, and shall not experience troublesome consequences. Too much stress cannot be laid on this; as the omission may bring on extreme nervousness, headache and disturbed sleep. The question now arises: Can hypnotic suggestion be used successfully to produce anaglesia during such minor dental operations as excavating cavities, extracting pulps, etc? Dr. Thomas Fillebrown, of Coston in his paper on "Hypnotic Suggestions as an Obtundent and Sedative," read at the World's Columbian Dental Congress, August 18, 1893, asserts that it can. For this purpose he indicates the first and second degree of the Nancy School, and by constant repetition of "Sleep, sleep, you are resting, you are not suffering, you are not dreading it, you do not care for it, sleep, sleep, etc., he maintains the hypnotic sleep, which otherwise might discontinue as soon as pain is produced. One especially good feature of employing hypnotism for obtunding sensitive dentine is, that the lightly hypnotised patient in most cases shrinks from pain, though he may not feel it, and thus we have a guide to avoid the pulp, which we have not in any other method of allaying pain.

Dr. Gomer Sandberg of Stockholm, issued in May, 1893, a pamphlet, Quelques, mots sur L'Hypnotisme, Stockholm, 1893, in which he describes the use of hypnotism for obtunding sensitive dentine in a case he had on the 20th of December, 1889. A lady came to him to have two teeth filled, but the extreme sensibility of the dentine did not permit even the touch of an excavator. He hypnotised the lady, and then suggested no agitation during the operation, quiet and insensibility of the teeth. The last words he repeated many times. He then commenced his work, which lasted one hour and a half, and during which she was perfectly quiet, not experiencing any pain whatever.

In conclusion, I will say that the practice of hypnotism requires a great deal of care and experience, and that the hypnotizer should have a good medical knowledge, which it may be said, the modern course in dentistry strives to impart to its student. Its study is not only interesting and instructive, but it is an art with which the good student of medicine and its various branches should make himself acquainted. With a firm will, and a determination to surmount all obstacles, the conscientious student of hypnotism, will pry into its mysteries, and, awed with wonder, exclaim with shakespeare:

"There are more things in heaven and earth
Than are dreamt of in your philosophy!"

—*Microcosm.*

ARTICLE II.

COCAINE.

BY J. L. NEWBORN, D. D. S., MEMPHIS, TENN.

"Certainly," says an able editorial in the *Cosmos*, "the ghastly record of fatalities consequent upon the use of cocaine preparations is long enough to demand a halt, and that the use of this drug be placed on a clearly defined legal basis."

In two papers published by Dr. Mattison, medical director of the Brooklyn Home for Habitues, on cocain poisoning, covering a period from May 23, 1887, to March 1891, he cites thirteen deaths and nearly two hundred less lethal cases. In another paper, covering a later period, increasing the fatal record, he describes two cases: strong men, stricture; twenty minims of four per cent. solution of cocaine thrown into the urethra—not hypodermically—produced violent convulsions, and in spite of all efforts, death in four minutes. A young woman in the hands of a complexion artist suffered great pain from the application of a strong solution of carbolic acid to the affected part. To relieve this a four per cent. solution of cocaine was freely applied—not hypodermically. In a few minutes she became excited, said she felt strange, walked to the window, and fell dead.

He emphasizes the need of great care in all cases of cocaine anæsthesia by the following pertinent conclusions:

1. Cocaine may be toxic.
2. This effect is not rare.
3. There is a lethal dose of cocaine.
4. This dose is uncertain.
5. Dangerous and deadly results may follow doses usually deemed safe.
6. Toxic effects may be the sequence of doses large or small, in patients young or old, the feeble or the strong.
7. The danger is greatest when given under the skin.
8. Cardiac or renal weakness increases the risk.
9. Purity of drug will not exempt from ill result.
10. Caution is needful under all conditions.
11. Reclu's method, Corning's device, or Esmarch's bandage should be used when injecting.
12. Nitrate of ampl, hypodermic morhpia, hypodermic ether, alcohol, ammonia, and caffein should be at command

History has repeated itself along lethal lines as regards cocaine so often, says the doctor, that it really seems surprising that any one at this day should question its powers for harm. It may not be known to all that cocaine has killed in a smaller dose than morphine, but that is a fact. It may not be known to all that cocaine has killed in a shorter time than morphine, but that too is a fact. "If, then, we have such a narrow margin of safety in the use of cocaine, in accurately known doses, the use of a nostrum containing cocaine, in which the existence of the drug is either denied or is of unknown amount, becomes little short of criminality." In spite of this grewsome record, which is but a fractional per cent. of all its untold, therefore unknown temporary and permanent injurious and often fatal, after effects, yet "fools rush in where angels fear to tread."

I suppose that every State and territory and county and important town from Puget Sound to the Florida Keys, and from Wool-as-took to the Rio Grande, has been canvassed by the nostrum vender, selling to dentists the exclusive rights to use these dangerous cocaine compounds. Our offices are periodically flooded with fancy-colored leaflets offering to give us a half-dozen bottles of their secret "hell fired" stuff if we will send on three dollars for the best hypodermic syringe ever made, and two or three extra needles thrown in. Some of these seductive offers come from men claiming to be dentists For references they often inclose pages of flaming certificates from men with "D.D.S." to their names. Often there are those with an easy conscience who have never learned to say no, but greedy of gain, and eager to double or quadruple their practice, with no proper knowledge of dentistry, ignorant of the most elementary features of the action of cocaine, therefore easy victims of the patent nortrum vender. These do not recognize the danger signals exhibited by distressed nature in the pallid cheek, the clammy brow, the labored breathing, and the wild, anxious stare. With a judicious admixture of "cheek," "gab," red rubber, and a hypodermic syringe loaded with something, they know not what the ignorant public becomes an easy prey, upon whom is entailed, by a wholesale mutilation of the young and old, the loss of useful organs that should have been preserved through life, and a worthless substitute, as a personal souvenir of their stupendous folly.—*Microcosm.*

ARTICLE III.

ELECTROLYSIS FOR THE SURGICAL TREATMENT OF STRICTURES.*

BY J. A. FORT, M. D.,

Professor of anatomy in the Ecole Pratique of the Paris Faculte De Medicine.

It affords me great pleasure to have the honor of being allowed through the kindness of your president to present to you a new instrument which I have devised and called "electrolyser," for the surgical treatment of strictures by the "linear electrolysis" method.

It is a well known fact that electrolysis has been discarded on account of the imperfect instruments which were used. My electrolyser has all the advantages of the urethrotome and none of its inconveniences. It looks like a small whip of which the handle contains a metallic wire projecting from the end which connects with the flexible part. This instrument, being first introduced into the urethra, is connected with the negative pole of a continuous current battery, and the positive pole is connected near the affected part, on the front of the thigh or over the pubes; then the current is turned.

The operation which is almost painless, requires thirty seconds (on an average), with a current of a strength of at least ten milliamperes, as indicated by means of a galvanometer. The electrolyser remains cool during the operation. In nearly all cases there is no bleeding, or but very little. The urethra is made aseptic before and after the operation, in order to prevent fever. I never allow a sound to remain permanently in the urethro for any length of time after the operation.

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*Read before the Section in Genito-urinary Surgery of the New York Academy of Medicine, Tuesday, November 12, 1895.

Usually the wound resulting from electrolysis heals quickly without any local treatment whatever, and often the patient can attend to business immediately after the operation.† In nearly all cases I pass a sound the third day after the operation, also the day after. I instruct the patient to pass a sound, No. 22 or No. 24 F., every month and every other month.

With the urethrotome, which cuts blindly, the surgeon can not ascertain the degree of density of the tissue of a stricture. On the contrary, by means of electrolysis, which merely produces a molecular destruction of the stricture, although the instrument remains cool, I have been able to demonstrate that there are two classes of strictures—"soft and hard." Hard strictures are in the proportion of one against five soft ones.

The time required to perform the operation varies with the density of the stricture. Some strictures are so hard that they cannot be successfully operated upon by electrolysis.

If my American colleagues who are familiar with the French language are willing to refer to one of my books entitled *Traitement des retrecissements par l'electrolysis lineaire* (this book can be obtained at the Academy of Medicine), they may find it quite interesting, as it will enable them to understand the improvements which have gradually been introduced in the applications of electrolysis to surgery during the last fifteen years. They will also understand how I have applied electrolysis to the treatment of strictures of the urethra, uterus, rectum, and œsophagus.

Up to date, I have performed in Europe a hundred and thirty-five operations on strictures of the œsophagus (recorded in my book), and with the exception of those which were caused by malignant growths of the wall of the œsophagus all recovered.

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†When the wound does not heal, I merely prescribe injections morning and evening with one part of hydrozone to twenty parts of water.

It has been my good fortune to meet here some leading surgeons who are authorities in the treatment of strictures, and I am very grateful to them for their kindness in giving me the opportunity to demonstrate the advantages of my method in operating upon some of their patients.—*New York Medical Journal*, Nov. 1895.

ARTICLE IV.

FURRED TONGUE.

BY EDWARD C. KIRK, D. D. S.

The views expressed by observers with respect to the significance of what is commonly known as "furred tongue" are exceedingly numerous. The color, magnitude, extent, and in fact each varying shade of difference in the appearance of the coating upon the dorsum linguæ has had assigned to it a special pathognomonic relation. The constant association of furred tongue with gastric disturbance is a well-recognized fact; hence it is that when the physician, or in fact the average layman, on examination of the tongue discovers the presence of a furred coating upon it, the diagnosis of a disordered stomach or liver is at once made. There is, however, a wide difference of opinion as to the causal relationship which exists between "furred tongue" and "spoiled stomach;" the popular idea being that the disordered stomach causes the furred tongue. While it cannot by any means be correctly asserted that this is always an error, there is ample reason for calling it in question, and in some instances at least there is good ground for the belief that the relationship is exactly reversed: in other words, that the disordered stomach is produced by and dependent upon the mouth condition.

During the general epidemic of grippe which occurred some years ago, the writer had frequent opportunities for observing the oral conditions of patients who suffered from the disease in question. An almost constant phenomenon which presented itself at the inception of the disorder and persisted throughout its course, was a heavy white coating upon the dorsum of the tongue. The tongue appearance was so constant and characteristic that the observation of this grippal tongue afforded an easy means of diagnosis in the recognition of patients who had been or were about to be attacked by this disease. A somewhat careful study of the phenomena presented by patients in passing through the cycle of the disease compelled the belief that it was zymotic in character, and that the port of entry for the specific organism was generally the oral cavity. In two cases, however, the nasal passages were involved; for an examination revealed a similar white, frosty-looking condition of the mucous membrane lining the nose and naso-pharynx. Immediately following the installation of the specific germ in the oral cavity, local inflammation occurred, involving the tongue, gingival margins, the velum and uvula, pharynx and tonsils. Following this, marked gastric disturbance ensued, characterized by loss of appetite, gastralgia, and the phenomena of gastric catarrh. Later, in some cases,—especially in children, —intestinal irritation of a catarrhal character supervened, characterized by watery passages with, frequently, hemorrhagic symptoms in the shape of bloody stools. These gastro-intestinal phenomena were intercurrent with the general systemic outbreaks, attended with pyrexia and the characteristic nervous phenomena. The cycle of symptoms here outlined plainly indicated the progressive infection of the whole gastro-intestinal tract, from the mouth downward, Here, in these cases, the desirability of thorough mouth sterilization at once suggested itself. To remove the deposit upon the tongue, a number of expedients were resorted to—hydrogen dioxid solutions, diluted Labarraque's solution, sublimate 1-1,000, boracic acid, and tin cture of iodin. The application of these remedies was in each case preceded by a thorough mechanical treatment of the tongue by means of a suitable scraping instrument, to remove as much of the deposit in this way as possible. While these efforts were invariably productive of good,—especially noticeable in their effect in preventing relapses of the disorder,—still the tenacious adherence of the deposit rendered its removal extremely difficult, and it was only through the utmost care and vigilance that the growth could be prevented from rapidly reforming, as none of the drugs used seemed to have the power to completely remove the deposit by a single treatment.

Subsequent experimentation in this connection, in trying to remove the furred coating from the tongue in cases ordinarily regarded as due to a bilious or disordered stomach, led to the use of phenol sodique, with most satisfactory results.

By seizing the tip of the tongue between the thumb and fingers armed with a napkin, and drawing it well forward, the furred coating can at once be removed by means of an ordinary tooth-brush, which has been first dipped in water and then had sprinkled upon it six or eight drops of phenol sodique. The strongly alkaline character of this application seems to exert a saponifying action upon the deposit, which is thus easily and completely removed at one treatment.

Thus the modus of infection in the case of grippe is as above outlined, seems to the writer to be beyond question; and further, that many other zymotic diseases—though they may vary considerably in their several local expressions in the oral cavity—invade the general system in an analogous manner. Diphtheria and bronchitis give strong indications of belonging to the class in question, the germs of which have the oral cavity as their port of entry. Hence the extreme importance of systematic and thorough sterilization of the mouth in all such cases; not only as a prophylactic, but as a means of preventing the continuance of the disorder.

The use of phenol sodique, as here indicated, promises most satisfactory results in such cases.—*Dental Cosmos.*

ARTICLE V.

THE ANESTHETIC AND ASPHYXIATING EFFECTS OE NITROUS-OXID INHALATION.

BY J. D. THOMAS, D.D.S., PHILADELPHIA, PA.

Read before the Pennsylvania State Dental Society, July 9, '95.

Mr. President and Gentlemen :—The past year having been the fiftieth anniversary of the discovery of the anesthetic effects of nitrous oxid, by Horace Wells, the subject has received a pretty thorough handling by gentlemen far better equipped for the purpose than your essayist, therefore, it is approached with no little misgiving upon his part. But there is one phase of the subject which even yet is not clearly understood or accepted, and it would seem, while the present interest exists, that it is an auspicuous time to endeavor to substantiate the correctness of certain theories of the physiological effects of nitrous-oxid inhalation which the facts seem to warrant, as well as to whom belongs the honor of the great discovery.

There have been two theories advanced by gentlemen well versed in the knowledge of the effects of anesthetics, and each theory is based upon exceedingly plausible reasoning for its acceptance; so that as yet there is no thoroughly established understanding of what should be accepted by unanimous consent as the true explanation of the physiological effects of nitrous oxid.

It will be the object of the present effort to endeavor to establish the fact that nitrous oxid possesses as true and specific anesthetic properties, independent of the apparent asphyxiating accompaniment, as any of the anesthetic agents now known.

You all know that the two theories alluded to (both of which have many indorsers) are, first, that nitrous oxid produces its peculiar effects by deoxidation of the blood, or by true asphyxia from the want of oxygen; and second, that the anesthetic effects of nitrous oxid are due to an inherent property of the gas, which is distinct from and independent of the asphyxial concomitant frequently observed in connection with its administration.

In the *Dental Cosmos* for May, 1893, Dr. H. C. Wood —than whom I know of no one better qualified to speak as a scientific authority—gave the results of a series of experiments upon dogs, by first administering pure nitrous oxid to the obliteration of the corneal reflex. Then the same with three per cent. and five per cent. of oxygen, and finally inducing mechanical asphyxia by means of complete stoppage of the oxygen supply. The results of these experiments with the different percentages of oxygen mixture show a variation in time required to produce insensibility to the corneal reflex from two minutes and fifty seconds to twenty-three minutes; but those with pure nitrous oxid and mechanical asphyxia varied from one minute and forty-five seconds to three minutes and twenty-seven seconds for nitrous oxid, and one minute and forty seconds to two minutes and thirty seconds for asphyxia. The close approximation in time between the latter two led Dr. Wood to the conclusion that the theory of deoxidation was the correct one; yet in nearly the same breath he admits being surprised at realizing the powerful effect upon himself of nitrous oxid with five per cent. of oxygen, after only two or three deep inhalations,—to which had he given due consideration, he would at least have been led to question whether asphyxia was the only effect produced by nitrous oxid.

More recently, Dr. W. W. Belcher—in a paper read before a Union Meeting of the Fifth, Sixth, Seventh and Eighth District Societies of New York, at Buffalo, on October 13, 1894—gives the results of his personal experience in some interesting experiments of respiring nitrous oxid pure, and then by rebreathing air to the exhaustion of its oxygen; and he reports a striking similarity in the effects and sensations of each, which leads him to the conclusion again that the gas is asphyxiating and should be used with caution, but, carefully administered, it is the safest and most agreeable agent in use for producing unconsciousness,—and yet, if its effects are produced by asphyxia alone, why should it be any safer or more agreeable than numbers of other agents which we know will produce unconsciousness from the same cause?

It seems to me that the phenomena which distinguish true anesthesia from asphyxia have not received full consideration, and that their distinctive features and effects are not well understood.

Anesthesia is usually regarded as a condition of artificial sleep; but there may be several ways of producing artificial sleep or unconsciousness, which would not be a state of anesthesia.

From an experience of considerably more than one hundred thousand personal administrations, there is recognized convincing proof that a subject in a state of anesthesia is physiologically in precisely the same state or condition as one in a like degree of intoxication from the effects of the different forms of alcohol, only one is produced by inhalation and the other by intoxication, unconsciousness, and, finally, if pushed to that extent, death as a result. The effects are produced and exhibited in process,—first, by sensory paralysis, beginning at the periphery; simultaneously the cerebrum is affected, but loss of upper function or consciousness does not take place until a considerable peripheral anesthesia has been produced. The motor nerves may yet retain their power, without the guidance of volition. Then the motor nerves, and finally the medulla, succumb, when respiration and cardiac force cease. The order of the progressive effects is precisely the same in each.

We have from the different forms of opium poisons, effects exhibited in stupor and unconsciousness, and, finally, death; but no stimulation or intoxication. Similarly, we have like effects produced by the inhalation of poisonous gases, such as the fumes of sulfurous acid, mephitic gases, and carbonic acid gas. These are narcotic poisons producing their similar effects, one by alimentation, the other by inhalation,—the latter carrying with them a degree of asphyxia; but the final results cannot be ascribed alone to the want of oxidation.

Asphyxia produced by the inert gases, nitrogen or hydrogen, or by mechanical obstruction of the air-passages, results in unconsciousness, violent respiratory effort, stertor, muscular twitching, and sometimes convulsions, with death as a final result from lack of oxidation in the circulation. Recovery from the unconscious period being attended by extreme lassitude, and perhaps complete prostration.

While it is true that the asphyxial concomitant is a feature of profound nitrous-oxid narcosis,—perhaps also of all anesthetic agents,—and it is likewise true that anesthesia is a concomitant of the asphyxial state, it must be borne in mind that the order of appearance of anesthesia and asphyxial symptoms in the two states noted is widely different. As I have before stated, peripheral anesthesia is one of the earliest phenomena observed in nitrous-oxid inhalation, while in true asphyxia anesthesia is not produced until deoxidation of the blood has proceeded to a point of positive danger.

That nitrous oxid is an inert gas so far as its power to support life is concerned, is accepted to-day as a truth, there being no separation of the oxygen from the nitrogen at the temperature of the human body; so that it need cause no wonderment that many accept the theory of its producing its effects by the want of oxidation, for the breathing of pure nitrous oxid unmixed with oxygen or atmospheric air will in some cases produce all the symptoms of asphyxia, such as stertor, constriction of the glottis, muscular twitching, and even convulsions; but here the similarity ceases, for the effects pass away in a phenomenally short space of time, leaving the patient with no perceptible after effects of lassitude and prostration, except in very rare instances.

The length of time shown by Dr. Wood's experiments with asphyxia upon dogs, ranged from one minute and forty seconds to two minutes and fifteen seconds to produce annihilation of the corneal reflex. How long it may require to producet he same effect in man is of course problematical, but in a former paper upon the subject I recorded that a man exhibiting at the Walnut Street Theater under the pseudonym of "The Man Fish," performed several feats such as eating and smoking under water in a glass tank for the duration of three minutes and nine seconds, without showing any of the recognized symptoms of asphyxia other than considerable pallor of countenance and blueness of lips.

I have recently taken a record in one hundred cases of the time required in my own practice to induce anesthesia, in which there was a judicious admission of air during the inhalation, and they were brought to the operating point of unconsciousness in from thirty-two to fifty-nine seconds. It is possible that, by the inhalation of an inert gas, the displacement of the oxygen in the lungs might produce unconsciousness in less time than by the voluntary suspension of breathing of this "man fish;" but comparing his time of three minutes and nine seconds and the one minute and forty seconds of Dr. Wood's experiment upon dogs for asphyxia, and the time—less than one minute—required by the inhalation of the gas in private practice, certainly shows that there were other influences at work than simply deprivation of oxygen; and it is just this lack of practical information which has led to the confusion in the theories alluded to. It is clearly shown that the gas possesses true anesthetic properties, by its exhibition of exhilaration, intoxication and unconsciousness; and it is equally true that it will cause symptoms of asphyxia, as shown by cyanotic appearance, stertor, muscular twitching, etc.; but the essential difference in the two states is evinced by the fact that the narcosis of nitrous oxid is capable of extension to the point of surgical anesthesia before asphyxial symptoms supervene; the period of inhalation being so short that the risk of injury from asphyxia is so infinitesimally small that it is hardly worth considering. This is shown by the fact that in this country alone, it is computed that at least nine or ten millions of people have inhaled the gas for oral and minor surgery at the hands of men of all grades of ability, with but three or four deaths resulting therefrom. That the gas is a thorough anesthetic independent of the asphyxial accompaniment, is still further proven that by a mixture of oxygen anesthesia can be perfectly produced with little or none of the symptoms of asphyxia so prevalent when the pure gas is given. So thoroughly are they imbued with this idea in Europe that they use it altogether, Dr. Hewitt going so far as to state that in his position "the administration of nitrous oxid free from oxygen is irrational and unscientific." He does not say that oxygen will in all cases prevent a small degree of cyanotic appearance, but that the condition is such that even a member of the patient's family could witness the exhibition without becoming in the least alarmed, and that the anesthesia produced is if anything more profound than with nitrous oxid alone.

The same results are obtained by the admission of a proper amount of air during the inhalation. Blueness is in many cases scarcely apparent, while stertor, muscular twitching, and pharyngeal constriction are entirely obviated. Then too, as further illustrating the fact that asphyxia is not the anesthetizing force of the gas, two or three breaths of air, after the discontinuance of the gas, will restore absolutely the natural color of the blood; yet notwithstanding this obliteration of asphyxial symptoms we still have an operating unconsciousness sufficiently prolonged for twenty to thirty seconds, showing conclusively the true anesthetic properties of the gas, and that the cyanotic appearance is only an accompaniment, the injurious effects of which are infinitesimal, and can be kept in complete subjection by combining oxygen or admitting atmospheric air. The latter method has its advantages over the oxygen, in that we can control each individual case by the proper admission of air, as occasion requires, thereby producing greater uniformity, while with the admixture of oxygen in bulk, the variation in time with the different degree of constitutional strength of the subject is sometimes annoying, and when applied by the duplex inhaler the frequent changes and manipulation of the oxygen supply are not reassuring to the patient. Again, comparing the similarity of effects of alcohol intoxication and anesthesia, we find many constitutions able to withstand the effects of an inordinate amount of whiskey, while others are easily affected thereby; the one being nearly impervious to the diluted article, the others incapable of resistance. The same powers of resistance are presented with the gas, or any anesthetic. This explains why the admixture of oxygen in bulk would vary so much in different individuals. By using the nostrils as a valve and having the lips as a guide, the degree of cyanosis can be controlled, the stertor and muscle twitching excluded, and complete anesthesia produced; the small degree of blueness being no disadvantage, and in the ordinary course of daily practice doing no harm. The fact of there having occurred three or four fatal cases admonishes us that there is a very small degree of danger attending, but unfortunately these were cases where conditions were not taken sufficiently into consideration, and where the possibilities of risk were not clearly recognized. The dangers are clearly from the production of asphyxia.

The cases requiring caution are the very anemic, the very full-blooded, the slow breather, and persons of low vital force from grippe or over-work. In the anemic, the paucity of red corpuscles is so great that the least deprivation of oxygen is felt in the heart's action, which may be depressed almost to the point of syncope at the expiration of the second breath. In such a case, in the event of death, it would be from almost instant heart failure, and the post-mortem would not show the effects of asphyxia in great discoloration of the blood and tissues, for the circulation would have ceased before such a condition could have been brought about, yet death would be legitimately from the want of oxidation. In the full-blooded, stertor and constriction of the glottis take place rapidly, and the difficulty of getting a sufficient amount of air in the lungs in time to reoxidize the blood might result in cessation of respiration, and finally death from asphyxia. A case of this kind would be more accidental than from the physiological effects, for if the tongue is pulled forward to open the air-passages before the respiratory effort ceases, recovery is certain. In the slow breather, danger of suspension of breathing is as great as heart-failure in the anemic. In the experience of your essayist there are just as many people in apparent good health with weak respiration as there are with weak heart-force; people who seem never to take a breath exccept with voluntary effort, and then not more than twelve or fourteen to the minute. The color of the lips would indicate that their blood is never fully supplied with oxygen, and they require the full amount of their capacity to keep them going, the same as the anemic do for their heart-action. In either case they are intolerant of an insufficient supply, so that suspension may occur early in the administration, the heart's action continuing from ten to fifteen minutes after. In the event of death in such a case, the post-mortem would undoubtedly show the results of asphyxia in the discolored blood and tissues. These cases have had much to do with the acceptance of the theory of asphyxia being the only effect of nitrous-oxid inhalation.

In the cases of low vitality, the dangers are less, but the results might be from prostration, the nervous system being too weak to throw off or rally from the effects of the anesthesia, independently of any depressing effect of the small degree of the accompanying asphyxia. Such a case is reported at the meeting in Buffalo; the lady, a professional nurse, who, like many of her profession, presented appearances of over-work, to which was added severe suffering from neuralgia, for which a resection of the inferior dental nerve had been advised after some months of suffering, loss of strength and health. In the mean time, the cause of her trouble was located in a third molar. On the day of the extraction, she had taken three-quarters of a grain of morphia; complete prostration followed the operation, the respiratory effort entirely suspended, pulse hardly perceptible, and had it not been for the continued use of the Fell apparatus for artificial respiration, the patient would no doubt have died. Cases where such results might be looked for were quite numerous during the grippe epidemic of 1891 and 1892, but whether from grippe or other enervating conditions, the results might be the same. In my own practice, two cases in this condition were advised against taking the gas; one died within twenty-four hours, and the other three days after leaving my office. Had I given the gas, even had they recovered at the time, death would no doubt have been ascribed to the effects of the gas.

Attention is called to these cases to illustrate the fact that some knowledge of conditions must be had, so that we can use discretion and avoid the dangerous results, by first recognizing the subjects which are likely to be so affected, and second by recognizing the symptoms of danger as they approach.

From the foregoing and from practical experience, it would appear to point to the conclusion that the inhalation of nitrous oxid does produce perfectly legitimate anesthetic effects as exhibited by stimulation, intoxication and unconsciousness, and, there being no separation of the oxygen from the nitrogen at the temperature of the human body, it is practically an inert gas so far as oxygenating the blood is concerned, which will, when its administration is pushed far enough, develop the asphyxial condition, the evil effects of which can be rendered practically *nil* by the proper combination of oxygen or air. Inasmuch as the condition of true surgical anesthesia precedes that of asphyxia, the latter should never be produced; and when it is, can only be attributed to a lack of intelligent understanding of the physiological action of the gas.—*Dental Cosmos.*

ARTICLE VI.

EXTRACTING TEETH.

BY DR. D. SIDDALL, THE DALLES, OREGON.

Read before the Oregon State Dental Association at Astoria, August 14, 1895.

When I accepted the invitation to write upon this subject I did not realize the gravity of the question, and feel now that I am not adequate to the task, it being, as I believe, the balance sheet of all dentistry,—extracting being the most important operation of a surgical nature falling upon the care of the dentist, and coming as it does when the tooth cannot be saved by filling or by any other means known to the profession.

In order to extract any tooth successfully, it is necessary to know what its configuration normally ought to be; also the proper instrument to be used. The condition to which decay has reduced the tooth must never be lost sight of. In all cases I remove the gum with the lance, as I do not believe in pushing it away with the forceps, nor take the chance of stripping it off the jaw by means of the pulling process, as every portion of the gum should be left to form, as it were, a cushion over the alveolar or bone formation; and in many cases I let my lance glide down outside the alveolar cavity in cases of friable teeth to the depth of one-eighth of an inch or more, in order that the forceps may pass down and bite off a portion of the process, and thus firmly grasp a portion of the fang. I then detach the tooth from the walls of its socket in the direction where least resistance is likely to be met. In this way you may remove a fang, or even a tooth with three roots, with but very little trouble or pain to your patient, even in case the fangs may be malformed, or bent, or curved, in such a manner as to be difficult or altogether impossible to extract by any ordinary means.

Again, there are other styles of teeth which are extremely difficult to extract—such as the wisdom teeth and lower molars, when broken off very low down; as the jawbone of these teeth are frequently found to extend out from the tooth almost at right angles and is very thick, thereby resisting the action of the forceps or any other instrument I have ever been able to procure in the market. These teeth I seldom attempt to remove by the pulling process, but simply roll them out by the use of my improved dental elevators, which consists of four instruments, two right and two left, two of them being large ones and two small ones, which I use in the following manner: After removing the gum with the lance, as above described (which you will find very necessary around the wisdom teeth), I insert the small elevator into the handle, which stands at right angles, grasp the handle in the right hand with three fingers and the thumb, extending the fore, or index-finger to the end and on top of the elevator, so as to guide the instrument and prevent it from slipping; pass the blade or beak of the instrument down alongside the root I wish to extract, with the flat side facing it, and the convex surface next the adjoining tooth or root, if there be one; but, if no tooth or root is near the one to be extracted, I then press the elevator down between the jaw bone and the root sufficiently deep, then, by turning it sideways, the teeth of the instrument will engage the root and it will be easily raised from its place. Then, if another root remains alongside from where the first one was removed, place the large elevator in the handle and grasp same as before and drop the beak or lip into the socket from whence the first root was taken, and, by turning it sideways, as in the first instance, it will bite off the thin bit of process alongside the root, when the teeth of the instrument will engage the root, and it, too, will be lifted out of its place without the least difficulty.

The upper wisdom teeth, as a rule, can be removed intact by one motion of the small instrument, but in some cases I use the large elevator if I find the roots stand too far back from the molar to be reached by the small one. You will please bear in mind that the wisdom teeth are very often found to stand obliquely to the molars, and are easily rolled out, if you can only reach them low enough down; hence, the benefit of the elevator, as you can place it where you please and always get the offender, when that noble instrument, the physic forceps, fails.

Now, in conclusion, I wish to say a word to the young men of this our grand profession, which is second to none, inasmuch as we relieve and prevent more suffering than all the physicians in the world. Let us imagine a person coming into your office, who is a poor suffering wreck of humanity. They may have had a tooth broken off and roughly handled by some inexperienced hand, and they wish you to take out a very, very bad tooth, as they are most apt to say; and they don't want you to hurt them, at the same time inform you that they don't want to take an anesthetic, as their physician has told them that they have heart disease. Now, what is the first thing to be done in this case? I will tell you what I do. I never attempt to even look in their mouth until I have first gained their confidence, and this I never fail to do.

I tell them that I shall treat them gently, kindly, and yet thoroughly, so that when I take hold of the tooth it is sure to come out; I also make them believe that by means of a local application I can to a great extent relieve the pain. This I do in most cases by a liberal use of equal parts of creosote and tincture of iodine on the gums around the tooth which simply stops circulation for the time being. But they may say: "Oh, my tooth has stopped aching now, so I think I will go home." "Yes," I will say, "what is that? Simply the action of your mind over the physical system. Now, if your mind can stop the worst kind of pain, why won't it make me hurt you awfully, if you only think so?" Now, gentlemen, while I do not exactly believe in hypnotism, I do believe in working on the mind; it is the principal thing with many you come in contact with. Try it, and by dexterously using your instruments your patient will get out of your chair, go away laughing and send you all their friends they can, to be hurt in the same way.—*Pacific Stomatological Gazette.*

ARTICLE VII.

DIED UNDER GAS.

Mrs. Flora Josephs, of No. 418 East Eighty-second street, died a short time since in the office of Dr. Robert Wolf of No. 315 East Eighty sixth street, New York, while under the influence of nitrous oxide gas.

Mrs. Josephs, who was twenty-two years old, was the mother of a four year old boy. Her husband has for some years been employed as a salesman in a grocery store, but has been out of work for the last two months.

Mrs. Josephs went to Dr. Wolf's office about 3.30 o'clock yesterday. She told the dentist that she had been suffering for a long time from four badly decayed teeth, and wanted them extracted. She neglected to give Dr. Wolf her name, simply saying that Mrs. Steinhart, a patient of his, had sent her to him.

She was afraid of the pain of having the teeth extracted, asked Dr. Wolf to give her gas.

"I asked her if she had ever taken gas," said Dr. Wolf last night, "and she told me she had not. I questioned her closely about the state of her health, and made the usual examination to ascertain whether she could stand the anæsthetic. She appeared to be healthy in every way.

"Just before I administered the gas she said she would like to have her husband present, and I told her to go or send for him if she wished. She talked about it for a moment, and finally decided not to send for him.

"I administered the gas carefully, and noticed that she seemed to take it very easily. She fell to sleep very peacefully and kept quite still while I extracted the teeth. Just as I was finishing the operation, I noticed that she stopped breathing. I rang for assistance, and several ladies who live in the house came in. One of them called Dr. Churchill, whose office is next door.

"In the meantime I had given the patient repeated hypodermic injections of whiskey, and lowered the back of the operating chair so that the blood would go to her head. When Dr. Churchill came in we tried artificial respiration, but with no result. Finally I gave her an injection of cocaine, and later more injections of whiskey. We worked hard for an hour to revive her, but it was no use."

When asked what he thought the cause of death was, Dr. Wolf said he believed Mrs. Josephs had some organic disease of the heart. The gas used was the same kind, he said, that he had used for four years.

Dr. Wolf did not know the dead woman's name, and after notifying a policeman, he went to the home of Mrs. Steinhart; of No. 146 East Eighty-ninth street. He was told that Mrs. Steinhart would not be home until 7 o'clock. He then remembered that Mrs. Steinhart had a cousin named Charles Josephs, who lived at No. 418 East Eighty-second street.

No one was in the Joseph's flat when he rang the bell.

Mrs. Simmons, who lived across the hall, came out and told him that Mrs. Josephs had gone to Dr. Wolf's office in East Eighty-sixth street. She was taking care of Mrs. Joseph's child. This convinced Dr. Wolf that the dead woman was Mrs. Josephs. She was afterwards identified by Mrs. Steinhart and Mrs. Simmons.

Coroner O'Meagher, who had been notified by the police, reached Dr. Wolf's office about 3.40 o'clock. After examining the body and questioning Drs. Wolf and Churchill, he gave a permit for its removl. The coroner exonerated Dr. Wolf from all blame, saying that the woman's death was purely an accident.

Dr. Wolf went to Joseph's house and told him of his wife's death. In the conversation which followed it was learned that Joseph, who is thirty years old, had been befriended by Dr. Wolf's father when he first came to this country from Germany.—N. Y. World.

(This is only another case in which the asphyxia produced by the gas was carried beyond the point or line for recovery. Whenever the affinity of the blood has been so weakened by deoxidation that it fails to take up the oxygen from the atmosphere, then the patient sinks, and all the powers of earth cannot restore to life.

This woman was in good health, but what of that if deprived of the force of life; which is free oxygen, as is always the case in getting absensation by the use of nitrous oxide gas. Therefore, as Dr. Richardson says, "its use should be prohibited by law."—Editor.)—*D. & S. Microcosm.*

ARTICLE VIII.

DENTAL ENACTMENTS.

Every one who has had anything to do with dental legislation must be impressed with the great unanimity among practitioners regarding the duty of some other man's making the necessary complaint. It reminds one of

Swift's definition of the charitable spirit: "A no sooner sees B in distress, than he petitions C. to relieve him." Those who have never paid a dollar or given a moment's time to the procurement or support of dental legislation, are most anxious for the repression of irregular practitioners, and loudest in their complaints of unlicensed competitors. They write importunate letters to those who have for many years devoted themselves to dental reform, and always with the charge that their names are not to be used. They will not sign a formal complaint, or assist in obtaining testimony against an illegal practitioner, demanding that those who have armed them with weapons for their own protection shall also fight their battles. It is very seldom the case that the dentists who have labored to establish a reputable profession, and to prevent the intrusion of unqualified men, can in any why personally profit by their labors, except indirectly. Their status is usually secure, and they have nothing personally to fear from illegal or unqualified competitors. Their work is for their profession, and their labors are unselfish. But so accustomed are others to rely upon their generosity, that unless they at once drop their own business to harry some interloper, they are roundly abused for declining to be at the beck and call of those who would use them to compass their own ends.

There can be no advance made without the co-operation of all. If it is desirable to draw the lines between legal and illegal practitioners, and to repress those who are unqualified for practice, there must be the active support and sympathy of every man who regards his profession. There must be a general determination on the part of all qualified dentists to enforce the law, and complaints should be made against every one who practises illegally. The inspiration for this should come, not from any personal jealousy or sentiment of rivalry, but from a genuine love for and desire to advance the best interests of the profession. If those who are to be benefitted by legislation give it but a half-support, public sentiment is influenced and the law cannot be enforced. It is the bounden duty of every professional man to assist in upholding the law, not only in his own neighborhood, but everywhere. He should strengthen the hands of those who are charged with the enforcement of the enactments, not alone by monetary contributions, for there are few who will give a dollar, but by words and acts. Unless there is unanimity among dentists, the public sentiment upon which all must depend for the support of the law will certainly condemn it.—*The Dental Practitioner and Advertiser.*

Communicated.

ODONTOGRAPHIC SOCIETY OF CHICAGO.

The annual election of officers of The Odontographic Society of Chicago, held December 9, 1895, resulted as follows:

President, Dr. C. E. Meerhoff; Vice President, Dr. E. R. Carpenter; Secretary, Dr. H. H. Wilson; Treasurer, Dr. Edmund Noyes.

Board of Directors.—Dr. P. B. Tuller, Dr. C. E. Bentley, Dr. J. G. Reid.

Board of Censors.—Dr. A. B. Allen, Dr. H. A. Drake, Dr. G. W. Schwartz.

H. H. WILSON, Secy.

Editorial, Etc.

DENTAL FACULTIES IN MEDICAL SCHOOLS.—There is a sentiment abroad that some dental schools have not the equipment of faculties and instructors that they should have. It is a prerequisite for admission to the National Association of Dental Faculties that the applicant shall have the endorsement of the Board of Dental Examiners of the State in which it is located; and it is the rule of the National Association of Dental Examiners that an application for recognition by that body must come from a member of the Association of Dental Faculties.

"Dental schools are not being formed now from an educational necessity. Two impulses now control this matter: first, personal ambition to have a position in and be connected with a dental school for the prominence it is supposed to give; and second, a purely commercial spirit on the part of medical schools. Over sixty per cent. of our schools are appendages to medical institutions; and nearly every dental school started in these later years has been under this outside influence."

The Committee on Colleges of the National Association of Dental Examiners recently expressed the view that more should be required to establish the right of dental schools to recognition than the fulfillment of the rules of the Association of Dental Faculties: evidence should be furnished that the teachers are of high standing, and that they and the school have the confidence of the local members of the profession. The committee also called attention of the impropriety of schools advertising as instructors practitioners who occasionally clinic before the students, but are not a part of the staff of the institution.

While "anybody with fair mechanical ability could pull or fill a tooth—and I have seen as good filling as I ever say inserted in teeth by a man wholly ignorant of the science of dentistry—and we all have seen the botches which educated men have made in attempting a similar operation," yet (in the words of an editorial in the January number of the Dental Cosmos) "the ability to teach dentistry is an acquisition quite distinct from, though supplemental to, the ability to practice it. So important has the art of teaching become that the study and investigation of its principles now constitute a distinct branch of scientific work, viz. pedagogics. To know dentistry from the point of view of the practitioner is one thing.....To know dentistry from the teacher's standpoint implies not only all that is included in the educational equipment of the practitioner but in addition to this the important qualification of ability successfully to impart this knowledge to others."

The plan of requirements of dental schools hereafter making application for recognition by the National Association of Dental Examiners provides that each dental school must have a teaching faculty of at least three professors of dental subjects, namely, for operative dentistry, for dental prosthesis, and for dental pathology and therapeutics; and at least five professors for medical subjects, namely, for anatomy, for physiology, for chemistry, for pathology and for materia medica.

Let us consider one thought in the discussion of "the equipment of faculties and instructors." In none of the dental de-

partments of the medical schools known to us is there in the teaching faculty a professor for "dental pathology and therapeutics." The title used by faculties is "M. D. professor of materia medica and therapeutics" as certified to by official documents. Now, we maintain that more than a medical education (so called) is requisite to teach dental therapeutics. The therapeutics of dentistry, unlike its anatomy, physiology and pathology differs from that taught in the medical schools. It is medical, surgical and prosthetic. In so far as it is a direction of medical science to the prevention, modification or removal, by medicinal or hygienic remedies, of the causes and effects of disease in the dental organs it forms part of a physician's practice, just as does the treatment of cerebral, cardiac or pulmonary disease. In so far as it is an application of surgical skill to the extraction of teeth, the removal of tumors, to the treatment of fractures or of fissured palate it is simply oral surgery, involving only such knowledge and skill in the use of instruments as every surgeon must possess. But dental therapeutics includes a class of operations which medical men were not taught in medical schools, and which, as physicians and surgeons, they do not practice. The prevailing and distinguishing feature of dental therapeutics is the art of replacement: replacement of dental *structure*, in such manner and with such material as shall prevent further action of the destructive agencies; replacement of dental *organs* by substitutes which shall physiologically restore impairment of function and æsthetically restore the natural expression of the face; and this, as was said before, a person with a medical education alone is not qualified to teach.

R. G.

Monthly Summary.

GOOD AND BAD TEETH.—That the tendency to decay of the teeth is in some way dependent upon a deficiency of lime salts has often been assumed; it is only lately however, that crucial investigations can be said to have settled the question. In a series of remarkably interesting articles, concluded in the current number of the *Journal of the British Dental Association*, on the Analysis of the Teeth, Mr. Charles Tomes records some quantitative estimates of his own and compares them with those of Dr. Black recently published in America. After describing in detail his method of estimating the various constituents of dentine, obtained from sets of teeth in his own posession, Mr. Tomes remarks: "Taking all teeth examined, the percentage of lime salts in dentine is 71.9. I am inclined, however, to think Dr. Black is right in thinking that the percentage of lime salts is not the factor which determines the liability to caries, for in one set of teeth, in which the wisdom teeth were barely in place, two bicuspids had been largely affected, there was incipient caries between many of the teeth one wisdom tooth was badly decayed and the incisors were markedly striated transversely; yet this set of teeth gave an average of 71.4 per cent. of salts, whilst another much worn dentition, quite free from any trace of caries, also gave 71.4 per cent. of salts; that is to say, both were 0.5 below the general average." It must certainly come as a surprise, not merely that teeth which we recognize as types as vigorous, healthy formation should be no better off in lime salts than those presenting all the signs of liability to decay, but, moreover, that teeth worn down by attrition, in which it has been assumed an extra calcification has taken place, should actually be below the averave percentage of lime salts. Another curious outcome of these investigations arose from a statement by Dr. Black that there were differences in the amount of mineral matter in teeth taken from the same individual. Mr. Tomes, in confirmation, adds: "But I also find an unexpected fact which is of much interest. The differences are not fortuitous, for I have found that the incisors and canines uniformly contained a smaller portion of mineral matter than the molars." He gives the proportion as follows: incisors, 71.2 per cent. inorganic salts and 28.8 per cent. organic matter and water; molars, 73 per cent. inorganic salts and 27 per cent. organic matter and water. This further appears to support the view that the proportion of lime salts is not a chief factor in the production of decay, for the molar teeth are certainly more prone to decay than the incisors, although according to these figures the former are richer in lime salts than the latter. Mr. Tomes has promised to carry his investigations further; meanwhile he suggests that "the difference between good and bad teeth may lie in the amount of combined water, in the proportion of calcium carbonate, in the nature of the organic matrix, or, finally it may not lie in the dentine at all, but may be a difference in the enamal."—*London Lancet.*

MAMMOTH TEETH UNEARTHED.—Mr. Nace Brock has shown two huge teeth which were dug out of a canal on Mr. Cad Koonce's land, near Richlands, Onslow county, N. C., at a depth of six feet. The teeth are adjudged to have belonged either to a mastodon or a megatherium, both of which animals are accounted by scientists to have existed ages before man, the former in highlands, the latter in lowlands. The mastodon was somewhat the larger of the two, but the megatherium had the greatest length. He was about thirty feet long, and by raising himself up and resting his front feet on tree limbs or other support he could graze upon the tops of moderate sized trees. It is to this latter animal that Prof. Charles Hallock, who has seen skeletons of each, supposes the teeth to have belonged.

Each tooth has two deep indentures on top in one direction, and a cross central one the other way. These give the top of the tooth somewhat the appearance of three rows of saw teeth with two teeth to the row.

They measure about 6 inches from the crown to the end of the roots, and they measure 6 inches across in one direction and four in the other. One tooth is nearly entire—only a small part of the roots having been broken off, the other is simply the upper half; the tooth that is entire weighs three pounds.

Some bones, seemingly remains of the animals to which the teeth belonged, were found also, but they were too decayed and crumbly to amount to much.

Mr. Hallock informs us that about fifty varieties of animal remains—some of extinct species and some of species still extant—can be found in the great South Carolina phosphate beds. The immense accumulations are accounted for by scientific men in this way. They say there were great floods which drowned out the animals, but the currents swept the great proportion of them to the places where the immense deposits are found, while here and there an animal or two would be caught and its remains left elsewhere, as in the case of this solitary animal now found in Onslow county.

Dr. Hallock gives us the following as to the origin of such deposits and the extinction of certain species:

"Historical geology might inform us that once upon a time, during the early part of the Cenozoic age, in the period termed tertiary, a mighty flood from which there was no escape submerged nearly the whole continent as it now sometimes does portions of the Mississippi Valley, and involved these innumerable creatures in one common destruction. Then did the overwhelming downpour of rain beat the helpless fowls to the earth.

"Here, in the still and stagnating waters, the processes of decomposition and sedimentary deposit went steadily on. The drift of other partial floods which succeeded gradually covered them. Silt, till, vegetable mould and all kinds of organic matter accumulated, including the decayed portions of the carcasses, and finally the lagoons filled up, the water evaporated or ran off, the land emerged or rather was raised by alluvial deposits carried from higher regions, plants and trees germinated, grew and maturated, and so by natural and intelligible processes the phosphate beds were formed. Portions of the bones and pachyderm did not decay, but became preserved or petrified. In the aggregate no better material for a compost heap could be gotten together.

These phosphate beds, therefore, are the records of the second great submergence of the continent, the first having taken place during the first glacial period, when there was no animal life. The partial submergences or lesser floods which occurred subsequently added to the depth of the deposits and to the assortment of animal remains, thus accounting for remains of extinct and extant creatures being found together. But it was during the great submergence that many of the now extinct animals disappeared."—*Forest and Stream*.

A CASE OF COMPLETE SEPARATION OF THE UPPER JAW.—A man, whose case Dr. G. H. Hopkins relates in the London lancet, November 2, aged 49 years, was admitted to Swansea Hospital on August 7, 1895. He had been struck on the back of the head by a wooden beam and knocked forward on to a coal truck, the sharp edge of which had caught him at the root of the nose. On examination the whole of the upper jaw was found to be detached from the skull, the nasal processes of the superior maxillary bones and the zygomatic processes of the malar bones being fractured. There was over an inch of separation in the middle line. The frontal sinus and anterior ethmoidal cells were opened up. The eyes were quite uninjured. The parts were cleaned and stitched up, free drainage being provided for by the nose. A Smith's gag was used, which kept the parts in very good position. The patient wore this continuously for a fortnight. He is, now quite well with the exception of slight ptosis of the right eye.

DEATH DUE TO DENTISTRY—A WOMAN'S FATAL BLEEDING AFTER HAVING SIXTEEN TEETH PULLED.—Reading, Pa. July 9.—Death came swiftly to Miss Hannah Simons as the result of having her teeth extracted. She bled to death, and the coroner is considering the advisability of holding an inquest.

A strange feature of the case is that she said frequently she was afraid to have the teeth extracted, as she thought the operation would kill her. Miss Simons repeated this apprehension as she dropped into Dr. H. L. Johnson's dentist chair Sunday. Miss Simons was employed as a cook in the Hotel Penn cafe. With three girl friends she went to Dentist Johnson's office about noon. She informed the tooth extractor that she had sixteen troublesome teeth, and she wanted them all pulled. Dr. Johnson says he advised Miss Simons to have but eight extracted at one time. He also informed her that it would be necessary to take ether, and Dr. Sterly was summoned to administer the drug.

The sixteen teeth were extracted, and immediately following the operation there was a violent flow of blood. This the dentist seemed unable to stop. Miss Simons was taken to her room and put to bed. The hemorrhage continued, and three hours later Dr. Sterly was called in to see her. He said the flow of blood could not be stopped. So it went on until eight o'clock in the evening, when Dr. Brockbill was summoned. He pronounced Miss Simons to be in a dying condition. The hemorrhage was not checked, and two hours later the girl expired.

In explanation of the fatal results of his operation, Dr. Johnson said that Miss Simons was subject to violent hemorrhages of the nose, and that her gums were in a spongy condition, owing to the decay of her teeth. He said he didn't know she was a victim to nose bleeding until after he had done the operation, or otherwise he would not have extracted the teeth.—*Baltimore Sun.*

IRON AND THE TEETH.—New forms of iron, that strong tonic and reconstructive, are introduced from time to time by scientific pharmacists and chemists, but some physicians still stick by their old friend the tincture of the chloride of iron in spite of objections to it. Not only is it very unpleasant to take, but the effects on the teeth are very serious and lasting.

In the *Dominion Dental Journal,* Dr. G. D. Martin, a dentist of Toronto, takes up the effects of this form of iron on the teeth and thinks that it is a very delicate question as affecting the relations existing between physicians and dentists. He says it is clearly laid down in works on materia medica and therapeutics, that this form of iron is especially injurious to to the teeth and should be used with great caution, and yet he is led to believe from his own and others, experience that physicians are lamentably careless and not conscientious in not not warning patients against its dangers.

Druggists have informed him that most of the prescriptions containing this form or any form of iron include no word of caution about the injury that may be caused to the teeth.

He says that it has been shown by experiments on teeth that the tincture of the ferric chloride diluted is even more dangerous and injurious to the teeth than when undiluted. That manufacturing pharmacists are aware of this danger is evidenced by the large number of elegant preparations of iron made with the object of avoiding this dangerous element corroding the teeth. Even the use of alkaline gargles, both before and after taking the iron, may be the best way of counteracting the effects of the iron, but it does not prevent it effectually. Dentists cannot say what remedies physicians shall use, but they can point out to physicians the harm done to the teeth.

The point of the writer is well taken and physicians are not sufficiently careful in prescribing iron, for even if taken through a tube some of the acid will in time affect the teeth if the iron be taken for a long time.—"Md. Med. Journal."

CIRCUMCISION.—The nervous system of the infant and of the infant and growing child is so delicately balanced that any irritation if continued is likely to produce vague, er even pronounced, trouble, often at such a great distance from the seat of irritation, that the real cause of the trouble is little suspected except by the most expert. It is partly on this account that Dr. Stone in a late issue advocates circumcision in the case of all infants.

While the feasibility of a wholesale preputial amputation may be questioned, still there are so many cases where the shortening of the covering of the glans penis would be of benefit, that the family physician should examine every infant under his care with the idea of circumcision. That it does cause irritation from the tight constriction of the foreskin, from the collection of smegma and other excretions behind the head of the glans penis, is a fact of every day observation. The Jews who as a part of the old Hebrew ritual, perform this operation on all male children very soon after birth, have been shown to be freer from disorders caused by long prepuce than other races.

The operation, as Dr. Stone Shows, is easy and simple, producing little pain; but care and antiseptic precautions should be used, and if the rites of the Jews demand that the circumciser should perform the operation, he should do it in the most approved manner and not infect the wound of the cut foreskin. Even if vague symptoms referred to a phimosis or paraphimosis do not disappear on completion of the operation, improvement may come later, and even if no improvement result at all the operation will have done no harm.

In the present craze for major operations, such little trivial work is apt to be neglected.

The infant and young child cannot give a clear picture of its trouble and the pediatrist, like the veterinarian, must rely on objective signs and use his powers of observation and his good sense.—"Md. Med. Journal."

ALUMINUM PLATES.—I have almost adandoned vulcanite for full sets, and as my failures have taught me more than my successes, I want to explain why so many fail. In the first place, aluminum is adulterated like almost everything else. We might justly call this the age of adulteration. it gets into everything—even into our religion; and we have adulterated clergymen just as we have adulterated dentists. You must get the aluminum free from any adulteration. You can get pure gold if you try, so you can get pure aluminum. In making your models do not put anything whatever in the plaster to harden it, and do not put anything in to harden the the plaster you use in the flasks. Use iron, not brass flasks. I am indebted to Dr. Steele for a hint which has removed my last difficulty, and that was a difficulty which puzzled me often. I used to strike up the aluminum directly between the die metals, and, of course, I got some trace of these metals on the aluminum. I now cover both die and counter die with a thin, tough tissue paper when swaging, using it double immediately over the plate. To make the vulcanite adhere to the aluminum you may either punch holes through it, or with a graver cut in and raise the metal without going through it.—L. D. S. in *Dominion Dental Journal.*

STONED BURS.—It is a comparatively easy matter for the dentist to stone his own burs, whether those previously stoned and worn or the ordinary cavity burs. It requires but a short time to bring each leaf of the bur to an edge with the use of a knife blade-shaped Arkansas stone, examining the bur occasionally during the process under a pocket microscope or hand magnifier. It is essential to perfect work that the stone be kept at a keen edge, and this is easily done as follows: Take a strip of sheet lead three inches long and attach it *evenly* upon a straight and *perfectly* level piece of wood about two-and a-half inches wide and a little longer than the lead. Allow the lead to extend over one end and the sides of the wood, bend the lead over and tack it to the wood over the sides and end—*not on the top*. Upon the top surface thus formed sprinkle some No. 1 emery, and without wetting or oiling the surface rub the stone lengthwise with the strip. Not more than three minutes rubbing of the stone, after it has been used to sharpen a dozen burs, will be necessary to bring it to the required edge again.—*New England Journal of Dentistry.*

J. Thomas Lippincott, D. D. S., Demonstrator, Operative Dentistry, University of Pennsylvania. writes: "I can cheerfully recommend Borine as one of the most pleasant and efficient aids in the treatment of inflamed conditions of the gums and mucous membrane."

The fact that decay of the teeth is of parasitic origin having been once established the thought suggests itself that it should be possible by means of properly chosen antiseptic materials, not only to arrest decay but to prevent its appearance. This is actually what Borine does and will accomplish.

Borine will devitalize the mouth in ½ minute, while it does not harm the delicate Epithelium, nor injure the dentine as nearly all other antiseptics do.

Borine is of absolute necessity to wearers of artificial dentures.

CHARACTER IN TEETH.—Character reading from handwriting, from shoes and from the face, has now been succeeded by character-reading from the teeth. A dentist explains in a contemporary that a careful study of teeth will reveal the fact that they invariably indicate, according to their shape and setting, the temperament of their possessors. One has only to note the teeth of one's friends and relations to verify his observations on pointed, projecting, short, square, tangled, even and pearly dentures. Those that are long and narrow, we are assured, denote vanity; those that are long and projecting indicate a grasping disposition; treachery is shown by the possession of small, white separated teeth; and inconstancy is revealed by overlapping teeth.—*Lady's Pictorial.*

BEESWAX IN CANALS.—Dr. Ives uses beeswax for filling root canals, having discarded all other materials for it. The beeswax is rolled to a point; inserted in canal, melted into tubuli by use of an Evans root drier, more wax being added until canal is full. A copper point is then heated and sent right to the end, the distance having first been measured. He thinks that in this way every part of the root is filled, and as beeswax does not shrink or expand, and is not affected by acids or alkalies, he is confident that it is the best of all materials within our reach.—*Dominion Dental Journal.*

POISONING BY LYSOL.—This antiseptic has caused the death of a child to whom it was administered by mistake instead of a laxative. Dr. Haberda has shown that the poisonous action of lysol is due to its containing kresols. It cauterizes the skin and mucous membrane, and when absorbed it affects the brain and spinal cord, producing unconsciousness, general spasms, reduction of temperature, and bleeding into the uriniferous tubules. He therefore recommends that it should be prescribed only in dilute solution.—*British Journ. Dental Science.*

RULES FOR THE SETTING OF OXY-PHOSPHATE CEMENT FILLINGS.—If the cement sets too quickly add a few drops of saturated solution of borax and water to the bottle of liquid to make it set slower.

If the cement sets too slowly add a few drops of pure hydrochloric acid to the bottle of liquid to make it set quicker.

If your bottle of liquid be full four drops of either will suffice.

If your bottle of liquid be two-thirds full three drops may be added, and if only half full two drops will be sufficient. Whatever be the quantity of liquid in your bottle, the borax solution or the hydrochloric acid may be added in these proportions.—*Microcosm.*

A COMPATIBLE ANTISEPTIC.—Dr. Baxter, of this city, in referring to antiseptics, thus commends the compound Listerine: "The genial compatibility of Listerine with so many standard remedies of the materia medica gives it a very wide range of applicability in the treatment of that large class of cases benefitted, relieved by the antiseptic treatment. It has served me well in gonorrhœ, catarrh, fistula in ano, and offensive discharges from the ear and uterus. It is the most elegant mouth wash I have ever used, and for dental use must prove invaluable."—"Dominion Dental Journal."

TO LESSEN THE PAIN FROM ARSENIC.—Mix equal parts antipyrin and arsenic. The antipyrin diminishes blood-pressure and relieves the congestion caused by the arsenic, and therefore diminishes pain.—G. C. Richards, in *Microcosm.*

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ARTICLE I.

DENTAL SCIENCE THEN AND NOW.

BY DR. S. B. PALMER, SYRACUSE, N. Y.

Read at the Twenty-seventh Union Dental Convention of the
Sixth, Seventh and Eighth District Dental Societies of the
State of New York, held at Binghamton, Oct.
29, 30 and 31, 1895.

At no time in the history of dental science has the subject of operative dentistry claimed the attention of the profession more than it does to-day. In 1839 the first dental periodical in the world was issued, entitled *The American Journal of Dental Science.* Then little was known of true dental science. Etiology of dental caries and filling teeth have been themes for discussion until now, with flattering success and fond hopes that operative dentistry was about to be placed upon a scientific basis. That we have taught that undeveloped teeth, like those of children, which need fillings at twelve years of age, are so lacking in mineral elements as to render the dentine a conductor of thermal changes, and electric currents, that nature's process of calcification is reversed, not only to cease adding to, but in some cases to take from, the lime salts already furnished. That is to say, that vital force is an agent active in highly organized teeth to hasten decay around metal fillings (gold in particular) even more, to withdraw or absorb lime salts to the devitalization of dentine, enlargements of cavities and loss of fillings. The May issue of the *Dental Cosmos* contains an article, in which all that has been claimed for dental progress up to now is considered a mistake, and we are astonished to find, according to that, there is no recognized law to govern a young graduate in the selection and adaptation of filling materials to conditions of the teeth. Quotation: "There is no basis for the selection and adaptation of filling materials to soft teeth, hard teeth, frail teeth (in structure,) or poorly-calcified teeth." I will further quote from the conclusions given in the article, to show that there is occasion for this writing. As the writer is held responsible for the introduction of the theory, which has often been declared to have no foundation in science, he feels it due the profession to know that the electro chemical theory of dental caries has not been discussed upon the plane of animal existence, but upon the physical or chemical plane, and that figures have been produced upon the latter plane, which, in that relation, are correct, are made to apply to all the conditions relating to the subject, ignoring the basis upon which the vital theory is founded. Thus the confusion which has attended the discussion thus far. The following is quoted: "Caries of the teeth is not dependent upon any condition of the tissue of the teeth, but on conditions of their environments." In this the vital principle is denied.

Again: "The objects to be attained in filling teeth are the perfect exclusion of the causes of caries from the tissues by sealing the cavity and securing such form as will prevent lodgment of debris about the margin of the filling, and thus prevent the further action of the causes of caries." Here, too, the vital action of the pulp through the tissue is not counted a factor. Please bear this in mind. And, again: "There is no basis for the supposition that some teeth are too soft, or too poorly calcified, to bear filling with gold, or other metal in use for that purpose, since all are found to be abundantly strong."

Once more: "With our present knowledge, the only basis for selection and adaptation of filling materials to classes of cases is the individual operator's judgment as to which he can so manipulate as to make most perfect filling, considering the circumstances, his own skill and the durability of materials."

This brings operative dentistry back to the starting point of discussion twenty years ago. Not so with practice; no amount of figuring can set practice back a single year. I regret that this crisis has been forced upon us. From the first we have done all things possible to prevent it. Reconcilation has been impossible. No quarter has been shown, and according to the writings, the electrical theory is denied recognition.

Notwithstanding all this, its scientific principles remain with an increasing practical backing.

We are discussing science, and we might as reasonably expect a collision of planets as to be told by scientists that figures proved contrary results upon definite points of investigation. Science is a revelation from the Creator to the understanding of man, through matter and natural laws. The figures which have been given, and which are supposed to annihilate the electrical theory, are based upon the *physical plane.* The electrical theory and the matter under consideration is based upon *two planes above,* in the kingdom of vital existence. There is no connection of laws and forces between the two planes, except as they have been modified in their evolution from mineral compounds up to organic tissue. Every effort has been put forth to crush out the electric theory, mostly by pointed denials, stating that it is not scientific, and that there is no ground for it to rest upon. The law and conclusive contact seems unaccountable, but not unanswerable. It must have been an oversight. I cannot believe that it was intentional to mislead. Figures which are correct upon one plane have been used to overthrow a theory which has no relation to conditions under which the figures were obtained Follow this, without discovering the misapplication, the *Dental Practitioner and Advertiser*, after quoting conclusions from the *Cosmos*, triumphantly adds:

"Now, what do our advocates of 'plastics for poorly calcified teeth' and 'gold only in teeth above the average in structure,' propose to do with these figures? They cannot be ignored, and must be met." The conclusions of their author regarding the 'adaptability, of filling materials, the proper 'electrical conditions' and tooth compatability are expressed as follows:

There must be a general abandonment of the idea that the teeth of any patient are so lacking in density as to interfere with any of the materials now in use.

"And these conclusions came from a man who has made more real scientific experiment to determine the truth than all the advocates of the 'compatability' theories have ever performed, or would perform in a hundred years, if their average for the past decade is to be maintained.

"What is to be done with these demoralizing figures? How are these confoundedly annoying demonstrations to be buried? They interfere with our personal comfort.' The paper was published in May last. Up to this writing there has been no response. Are we all paralyzed? Is there no chance for squelching this modern disturber of Israel? Must we have forced down our throats the unpalatable charge that the failure of our operations is due to our own carelessness or incompetence? If so, Heaven save us from ourselves. There is enough in the above to fill our pipes for a good long smoke, and it is hoped that the fumigation will soon begin."

The above editorial is given in spirit and language well calculated to provoke controversy rather than to preserve harmony. To answer the questions accordingly would not dignify a scientific discussion. To answer in brief:

"What do our educators of plastics propose to do with these figures? They cannot be ignored and must be met." They should not be ignored. They relate to inert matter, and in that connection, they are correct and admitted. They will not be met with a collision, as desired, but will quietly pass by upon the freight track as inert matter. "How are these confoundedly annoying demonstrations to be buried? They interfere sadly with our personal comfort." We answer, bury them with the hatchet which has caused the discomfort; and there will be no more annoyance. It says, "The paper was published in May last. Up to this writing there has been no response. Are we all paralyzed? Far from it. The trial against the electrical theory has been pushed for twenty years. It was summed up in the May *Cosmos*, and we have waited until the *Practitioner* calls for a response, in substance this: have you anything to say why sentence of banishment from operative dentistry should not be pronounced upon the electric theory?

We beg leave to prove that the case has not been tried under the laws relating to it, and will go back to the first principles of matter which relate to elements; these establish primary laws and forces and carry them forward and up through the changes until they appear in vital tissue, on the plane of animal existence, where the case will be opened for a new trial. So far as books and authority go, we will use the best, and will quote from "The Conservation of Energy," by Balfour Stewart, LL. D., F. R. S., Professor of Natural Philosophy, at the Queen's College, Manchester, Eng.: "There are four planes of material existence, which may be represented as raised one above the other. These are: (1.) The plane of elementary existence; (2.) The plane of chemical compounds, or mineral kingdom; (3.)

The plane of vegetable existence; and (4) The plane of animal existence. Their relation to each other are truly expressed by writing them one above the other, thus :

4. Animal.
3. Vegetable.
2. Mineral.
1. Elements.

"Now, it is a remarkable fact that there is a special force whose function is to raise matter from each plane, to the plane above, and to execute movements on the latter. Thus it is the function of chemical affinity alone, to raise matter from plane No 1 to No. 2, as well as to execute all the movements back and forth by action and reaction; in a word, to produce all the phenomena on No. 2. which together constitutes the science of chemistry.

It is the prerogative of the vegetable life force alone to lift matter from No. 2 to No. 3, as well as to execute all the movements od that plane, which together constitutes the science of vegetable physiology. It is the prerogative of animal life force alone to lift matter from No. 3 to No. 4, and to preside over the movements on this plane, which together constitute the science of animal physiology. But there is no force in nature capable of raising matter at once from No. 1 to No. 3, or from No. 2 to No. 4, without stopping to receive an accession of force of a different kind on the intermediate plane. Plants cannot feed upon elements, but only on chemical compounds; and animals cannot feed on minerals, but only upon vegetables, or that which has been raised above vegetables"

These facts have not been considered in the conclusions, as all are based upon the physical plane. Let us follow the laws up from one plane to another and see the changes there is in matter as we ascend. Chemical force unites elements and chemical compounds are the results, which embrace everything below organic compounds. This is the physical plane; here we are taught physics, chemistry and electrolysis, as well as other forces, cohesion, chemical affinity, etc. The principles taught by the galvanic battery and its current, and the electro-plating bath, we take up to the plane No. 3, vegetable physiology. Vital force touches chemical compounds, and vegetation springs up from the lichen to the mighty forest trees, with all intermediate productions calculated to support animal life. The galvanic battery also has been organized. One pole has been located in the foliage and the other in the rootlets of the tree or plant, and a to-and-fro current passes through the stem or trunk, while the plating fluid, this plane taken, is the sap which contains all the organized elements requisite for the growth of the vegetable.

Again, vital force comes from above and touches organized matter; animal life appears from microbes to man; the latter is given will power. Man is a cosmos. The body contains organs, conductors, currents, elements, nutrition and vital intelligence, sufficient to care for each and every part of the body, to build or take down any of its tissues. To bring up our variable laws from the vegetable plane, what was foliage reappears in the *lungs* for breathing; digesting of minerals by chemical action of the rootlets appears in the stomach. The sap appears as blood, which contains all the material needed for growth and support of the system. Each organ is endowed with intelligence and force to convey material to and from points under its supervision. The oral cavity is the receptacle in which food is ground, insalivated and prepared for the stomach. The oral cavity is the only vital laboratory in which chemists are allowed to work, and the only instance in which scientists insist upon vital tissue living upon elementary food. This is done when sensitive teeth are filled with gold without protection.

Vital currents act upon organic matter on the blood or secretions, the same as physical currents do upon metals in plating, as it is known that the reversal of a current undoes the plating and transfers it to the negative pole, which before was positive.

So thought influences these currents. Thought causes blood to fill the brain. Shame brings a flush to the face. The thought of eating a lemon causes the saliva to flow to neutralize the anticipated acid, etc. Exposure of the body to cold, the change of a collar, cutting of the hair, sitting in a draft, etc., is often the occasion of a cold. This is merely the reversal of the vital current which brings the exposed parts to an abnormal condition. When an undeveloped tooth, that is one not fully calcified, is filled while sensitive, the same reversal takes place.

In teeth there are two conditions, attended with different results. When teeth have received sufficient lime salts to render the dentine a non-electrolyte, or a non-conductor of thermal changes, this occurs; the surface of dentine in contact with the metal becomes inert matter, and serves as a protector of the vital tissue. The vital force in tissue works up to the dead line to complete calcification as it would against enamel.

When the dentine is poorly calcified, devitalization goes deeper; there not being sufficient mineral matter to protect the organic, the latter decays. Nature does not repair or resist the encroachment of decaying tissue, and quite frequently the pulp takes back lime salts from dentine beneath gold fillings which seem perfect, and which have done service for years, when the inflammation of the pulp demands removal of the filling, and it is found that only the organic portion remains as a protection. I have seen cases in which all the teeth were breaking down from this reversal of the vital current. While I have not recommended the heroic treatment, there are cases where devitalization of the pulp would correct the difficulty. This derangement of nutrition is manifest in several ways. Change of climate, long sea voyages, etc., are evidence of the same principle. Ptyalism from effects of mercury is a manifestation of systemic polarity. Nature disapproves of an element.

Let us apply this principle to the absorption of the roots of deciduous teeth, which is a vital process. By pressure directly upon the end of the root the current is reversed and the material is taken away, or from one side of the root where the pressure is in that direction. The surgeon bandages a limb or part to cause absorption. Iodine is used for the same purpose.

Thus it may be seen that a gold filling in contact with highly organized dentine strikes a chill to the tissue by a breath of cold air, or cold food, or cold drinks. In young teeth lime salts seem to be withdrawn and caries follows. I will only add that gold may be adapted to the conditions of poorly calcified teeth by insulation, by the use of chloral balsam, paraffine, etc., which exclude moisture, prevent thermal change and allow nature to proceed with calcification. This is the adaptation of materials to conditions.

Gentlemen, the doctrines which we have set forth are not of modern discovery, as may be seen by the closing sentence of a paper which I read more than a score of years ago. "What I have presented may not be new to you. To me much of this knowledge is the teaching of a 'still small voice.' communicated through the magnetic needle—an expression of a force manifest in heat, light, motion, magnetism, electricity, chemical affinity, life, and the imagination adds, Divinity." It had required years of observation and study to obtain the principles given in that early day. Of one thing I am certain, and that is that this advance doctrine could not have come from any other profession or occupation than dentistry. The oral cavity is the only laboratory where minerals and metals are daily brought in contact with vital tissue, and my excuse for the persistence in bringing this matter before the profession is, that circumstances placed me in a way to gain just this knowledge, which perhaps has never been forced upon another, and which I believe it is my duty to give the profession.

In 1847 I commenced wearing a silver plate upon which were mounted nine teeth. Having previously become somewhat acquainted with galvanism and electricity from private study, my study of oral electricity began with the wearing of the plate. I soon learned that foods of various kinds produced galvanic currents disagreeable or otherwise, but still unnatural. Sulphur in eggs, the smoke of gunpowder, which in addition to sulphur contained carbon and niter, was quite as perceptible by taste as by odor. The same in breathing through the mouth near sulphur springs. Carbon, while it is yet vegetable, as in coffee roasted, broiled meat, bread toasted, griddle cakes, etc., all communicated to the plate and gave a metallic taste; nor was this all taste, but a sensation communicated through the metal, disagreeable in silver, natural in gold, lacking always in rubber.

Another lesson was to allow the surface to become oxidized or sulphurated, which almost overcame the action. This was a help to patients, as rubber was not then in use. In time gold was substituted for the silver plate, which was a decided improvement over the latter. Gold being a negative element, the action was changed from the plate to the positive elements in contact with it. Gold being a negative element, the action was changed from the plate to the positive elements in contact with it. Gold becomes charged with electricity during contact with food, which is positive or easily decomposed. The greatest objection to gold dentures as formerly made, was the difficulty in cleansing; such plates should not be worn. The next experiment was with rubber, which was very unsatisfactory on account of heat, it being a non-conductor, which also prevents taste much more than metals. These are points to be gained by actual study, by comparison in the mouth. My observation led me to conclude that there was no difference between red and black rubber on account of non-conductivity, which is the main cause of spongy gums. Then came an aluminium swaged plate with rubber mountings, which is by far the most comfortable and natural-feeling plate I have worn. Cast aluminium had a more severe trial, as it came in contact with two bridges worn below, occluding with the aluminium caps which covered a molar on either side for the purpose of increasing the bite. The plate was inserted and I noticed a metallic taste, but thought it might pass away. On going upon the street in the evening I noticed that all the lights were remarkably unsteady, annoyingly so, but soon learned that it was caused by closing the jaws. The shock which I had not noticed before became visible or perceptible through the optic nerve.. The gold, as it does in all mouths, stands at a potential higher than the positive elements in the mouth. On closing the circuit the running down of the potential caused the twitching of the nerve, and thus the apparent flickering of the lights. Removing the caps and substituting rubber corrected the trouble. Still, cast aluminium worn with gold gives more galvanic action than rolled plates. I know that it is not right to wear an upper and lower plate of different metals, except gold and platinum. Many experiments have been made that no one not in the study of the mouth would have thought of. A molar which was clasped with gold had a coronal cavity nearly in the center. This was filled several times. Being surrounded with sound enamel, there was no danger of decay. A gold filling produced no sensation when the tongue bridged from filling to clasp, or when it came between the bridge below and the filling. An amalgam filling gave a decided current. Copper amalgam was tested, and for a time was altogether the most disagreeable, but in a few months it turned black and became tasteless. This filling was all right when the tooth was extracted on account of absorption of socket. It was clasped and supported a plate forty-one years. The above are some of the lessons learned from nature direct, and to me they have become so scientifically correct that no figures upon experiments made on the chemical or second plane can set them aside. They amount to positive knowledge.

Now, let us take a stand upon the plane No. 4, where operative dentistry belongs, so far as the treatment of normal vital teeth is concerned. And here we have only kind words for "this modern disturber of Israel." As the article states, the investigations relate to the physical properties of the teeth, and are as correct as it is possible to obtain. The vital principle of the teeth seems to be ignored, as the quotation shows. "Caries of the teeth is not dependent, upon any condition of the tissues of the teeth, but upon the conditions of their environment." When teeth are extracted, that moment they become inert matter and belong to the physical or chemical plane. Crowns of pulpless teeth in the mouth, and those that have done receiving nourishment from the pulp, also come under the line of investigation so laboriously performed and scientifically set forth. All other teeth from infancy to old age are vital organs, in proportion as they receive vital support and circulation, and they belong to the fourth plane. From first to last investigators have left the vital distinction out, and by making the laws which are limited to the physical plane cover the whole ground, leaves nothing for the vital principle to stand upon. The motive for doing this I cannot discover. The greatest mystery is that it is done by the acknewledged leaders in the profession. This is the part that I most regret. After having failed to have this oversight corrected, so as to preserve harmony, a crisis has been reached, and we were compelled to make the above statement. We remained silent and the taunting question was put: "Are we all paralyzed? Is there no squelching this modern disturber of Israel?" If these conclusions gave us any practical benefits above our present attainments, it would be to an advantage; but no, as has been previously stated, the object has been to show the fallacy of the teaching which is followed by many operators.

Please note the principles we claim as beneficial to operative dentistry upon the animal plane. Trusting that the distinction has been plainly given, we will deal only with teeth in a condition in which they are nourished by vital forces through the pulp or pericementum. Since the age of twelve years has been mentioned, let us take the average teeth in that condition, which will also apply to any age, according to their vitality. The first conclusion we notice is this: "There is no basis for the supposition that some teeth are too soft or too poorly calcified to bear filling with gold or other metal in use for that purpose, since all are found to be abundantly strong." Again: "There is no basis for the selection and adaptation of filling materials to soft teeth, with our present knowledge. The only basis for the selection and adaptation of filling materials is the operator's judgment as to which he can most perfectly manipulate."

In answer to the above, I think that the majority of operators will call such teeth soft and poorly calcified. We will still use those terms upon the vital plane. It is impossible for me to harmonize the conclusion that there is no basis for the selection and adaptation of the filling materials, etc. "With our present knowledge the only basis for the selection and adaptation of filling materials is the operator's judgment as to which he can most perfectly manipulate." This is the hardest blow ever dealt to dental progress. It admits that operative dentistry is not a science, that there are no known laws by which to adopt filling materials to the conditions of the teeth. It gives license to the young graduate to gratify the highest ambition of every enterprising young operator to do gold filling whenever a tooth would seem to stand the operation, only to find to his sorrow and to the patient's loss that a mistake had been made.

Twenty-five years' experience on the Dental Examining Board of the Dental Society of the State of New York, and sixteen years of Registration for six counties in the State, has afforded knowledge of the teachings of various colleges throughout the State, as well as the understanding of graduates bearing upon this subject. With the schools, as with practice, there has been evolution. At first but a single college ventured to brave the criticism resulting from the teaching of this heretical doctrine; others have cautiously taught liberal ideas as practice led and gave support. Notwithstanding, if graduates can be relied upon, many schools are impressing their students with the falsity of the electric theory.

The most charitable allowance for opposition by investigators would be that they do not comprehend the laws and forces upon the plane of vital activity. This seems evident from the fact that the author of the article twice alludes to constitutional causes, but in a manner to act upon the environments of the teeth through saliva rather than from within, when in fact both agencies are at work at the same time. I believe that if the author had made his investigations from the chemical standpoint, together with the electro vital experiences which have been forced upon the writer, that operative dentistry would now be standing upon a scientific basis, and dental schools would be teaching laws and principles which would enable graduates to see the end from the beginning of their operations, rather than to be told to rely upon their own judgment without experience to guide them, which would be a decided gain over the claims of the author, quoted as follows:

"The greatest good that I could expect to come from this laborious investigation (except as it may effect the future study of the caries of the teeth), would be the general abandonment of the idea that the teeth of any patient are so lacking in density as to interfere with reasonable filling operations with any of the materials now in use." Thus the effect seems to have been put forth to destroy a theory without substitution. It seems time now that the coming investigators who have been watching the outcome of the electric theory, the microbic theory, the physical theory, come to the front and do some independent thinking for themselves and the profession. I am positive that great good will grow out of this occasion.

To recapitulate: Chemical force raises elements to the second plane, which is the plane of chemical compounds under the control of physical laws and forces. Vital force raises chemical compounds to the third plane, which is the vegetable kingdom. In this kingdom the matter is organic, and is under control of vital forces which act upon organic matter upon this plane. From the third plane animal force raises organized compounds up to the fourth plane, which is the plane of animal physiology. Man stands upon this plane, a cosmos. In him are incarnated all the elements and forces found in the body. All have been lifted up by a force or power from the plane above. Man has vitality, thought, will, sensibility and action. These endowments control his system, and the various organs of the body perform their functions under vital direction, involuntary or voluntary, as the occasion of circumstances demand. All the matter in the body proper, or the food which supports it, has been so organized as to be under vital control.

Here we search our book in vain for further knowledge; and here, too, investigators bring up physical forces from the chemical plane, and by them condemn vital action.

To illustrate: Many years ago the highest recognized dental authority in the world proved to the profession that a tooth was not an electrolyte, because it is a non-conductor and could not be injured by a gold filling, and that settled the matter for all subsequent investigators. Now comes up an array of figures from the same plane, and the conclusion from their teachings seem to have settled the annoying question in the mind of another defender of operative dentistry against heretical doctrines, and he exultingly remarks: "Are we all paralyzed? Is there no chance for squelching this modern disturber of Israel?" Could he have forgotten that "there is a God in

Israel?" I know in whom and in what I have trusted, and regard this as the brightest day in the history of operative dentistry.

We again call up the human body and apply our organized laws and forces to the teeth, and, to be charitable, will divide with the opponents of our theory, giving to the latter all teeth that have been extracted, pulpless teeth in the mouth, as well as those from which for any cause, either by age or abnormity, have lost vitality or pulp nourishment. This class belongs to the second, or physical plane, upon which the experiments were conducted and with which they agree in the mouth with conclusions as claimed by the figures. The other class includes the vital organs, in which the pulp and the tissue are in a normal condition.

To abbreviate: I will take for an illustration the teeth of a child, although the same principle applies to all this class of teeth, according to their organic construction. Each tooth is a vital body, a part of the whole system. It has a pulp, which is supplied with material to furnish this tissue with all that is required to make a normal tooth. It also has vital force like other members of the body, which take the material to and from the parts according as vital energy directs. We understand that an exposure of even a small portion of the body will produce a cold, perhaps neuralgia, which is a reversal of the vital current, causing an abnormal condition.

We understand that a metal filling when placed in contact with vital tissue also reverses the current. Nature will not convey lime salts to a point of contact with metal. There will be a lamina of dead matter in thickness according to the conductivity of the dead tissue. In normal dentine, and even in the more highly organized, this devitalized lining will prove a protection, and the process of calcification go on under the cover, but when the organic matter is so great as to allow fluid circulation, chemical action ensues and caries is the result. The tissue becomes an electrolyte under the laws governing the action upon the vital plane. What is understood by the adaptation of filling materials to the condition of teeth is this:

Nature will not tolerate the repeated shocks or thermal changes produced by metal in the teeth where lime salts are being deposited. Plates may be worn, or crowns upon roots, in which case there is no calcific process going on; but thermal changes produce an abnormal condition, with results as described.

When there is a liability that such changes will take place, a non conducting filling like gutta-percha, a lining of chloro-percha, or chloro-balsam, or some oxide, will allow the process of calcification to proceed. This is the adaptation which is rejected. Not only does the principle apply to the teeth, but to the whole system. Constitutional effects of mercury change the natural potential of the system, and ptyalism is the result; the whole secretions being changed. Change of climate, altitude, sea air., etc., all come under the same laws for benefits or injuries, according to conditions.

There can be no progress in etiology of dental caries so long as investigations are based upon the physical plane. The study must be conducted by observation of vital forces upon matter, the plane where man lives, moves and has his being. Then there will be harmony with cause and effect. Then we can understand how vital force controls organized matter. Also, that constitutional changes through vital circulation in the tissues is as truly a dyscrasia as gout or rheumatism.—*Dental Practitioner and Advertiser.*

ARTICLE II.

THE ORIGIN OF SALIVARY CALCULUS.

BY HENRY M. BURCHARD, D. D. S., M. D., PHILADELPHIA, PA.

As will be seen from the accepted name of these deposits, their main origin is recognized to be from the saliva. Every writer upon the subject of dental or oral pathology has advanced some hypothesis in explanation of their presence and manner of deposit; but, in searching for the exact *modus operandi* of their formation, it is found that none of them sufficiently explains the composition of the concretions, their color, or the occasionally odd situations in which they are found.

This much is accepted beyond cavil,—that they are in large part composed of salts of calcium (almost enterely the phosphate, and a small amount of carbonate), and combined with organic matter; the lime-salts having been held in suspension or solution in the saliva, and, for some insufficiently-explained cause, precipitated in favorable situations, and under not clearly explained conditions.

One hypothesis regarding the cause of the precipitation of the calcium carbonate has been, or is, that calcium carbonate is held in solution by virtue of the presence of dissolved carbonic acid, as a bicarbonate in the saliva concontained in the acini and ducts of the salivary glands; and when the saliva is poured from the ducts into the oral cavity, the carbon dioxid is disengaged and escapes, and the calcium salt, held in solution thereby, is precipitated in consequence.

Another view is, that the calcium salts are merely held in suspension in the saliva, and are precipitated when the saliva is at rest in the oral cavity. This is supported by test-tube experiments.

An opinion held by the writer for some time, but never published, was as follows: it is known that the saliva contained in the salivary glands and ducts is a fluid of alkaline reaction, holding in solution salts of calcium.

It is also recognized that in most mouths the reaction of the fluid contents is acid; the alkaline secretion of the glands mixing with the acid fluid contained in the mouth, causes the precipitation of substances soluble in an alkaline and insoluble in an acid fluid. The weakness of this assumption, as a full explanation, consists in the fact that calcium phosphate is soluble in dilute acids and is precipitated by alkalies, a reversal of the conditions necessary to prove the first assumption. But still, as we see, the lime-salts of the saliva are precipitated in a dilute acid solution.

Another hypothesis, not sufficiently explanatory, is that the calcium phosphate, in the fluid at rest, is deposited and retained in pockets, or on irregularities which may be present, and form a nidus. Accepting this hypothesis, we are still confronted with the question of mode of combination of the organic matter, which forms a constant and large part of the concretions.

These several difficulties and objections have prompted the writer to some experimentation upon the matter in question, in the hope of arriving at an explanation of the several factors involved, chemical, physiological, and pathological. It is believed that; in substance, the deductions drawn are warranted by the facts presented.

There is involved, first, the fluid which furnishes the material from which the concretions are derived.

Second, the cavity into which this fluid is poured; its configuration, boundaries; the anatomical and physiological peculiarities of its component parts, and pathological manifestations in and about these parts. These latter are present, as we know, in the vast majority of cases; or at least in so great a ratio, that it is difficult to draw a line between physiological and pathological states.

Third, the composition, structure, and appearance of the substances resulting through the interaction of the preceding factors.

First, with respect to the saliva itself. It is the combined secretion of three pairs of glands and, in part, that of innumerable small glands. According to Landois, the secretion of the partoid gland contains no mucin, has calcium in solution in the form of bicarbonate, and has present the greatest amount of CO_2 of any of the secretions of the several glands, and, according to Foster, contains probably globulin. Upon standing, calcium carbonate is deposited, this owing to the escape of the carbon dioxid which has held it in solution as bicarbonate.

The secretion of the submaxillary gland contains much mucin, and also deposits $CaCO_3$ upon standing.

That of the sublingual gland contains more mucin than the former, and is quite strongly alkaline.

Jacubowitsch gives us the result of analysis of the mixed secretion:

Water	99.51
Solids	.49

and of the solids:

Soluble organic matter	0.13
Epithelium and mucin	0.16
Inorganic salts	0.102
Potassic sulfocyanid	0.006
Potassic and sodic chlorids	0.084

Hammerbacher gives as the ratio of the solids in 1000 parts of saliva:

Epithelium and mucin	2.2
Ptyalin and albumin	1.4
Salts	2.2
Potassium sulfocyanid	0.04

Kulz found that of the 7 c. c. of gases contained in 100 c. c. of saliva there was 3.5 c. c. of free $CO2$ which could be pumped out of it.

From the list of solids it will be seen that mucin and inorganic salts form the greater amount. Of the salts of calcium different analysis show the carbonate and phosphate to be present in variable amounts, the phosphate usually stated to be in greater amount.

The next consideration is the cavity into which this combination of secretions is poured.

This is an irregularly ellipsoid cavity, open at its posterior, and divided into two sub-cavities,—an external and internal,—by an arch composed of thirty two pieces (the teeth) and their supports, which are covered by mucous membrane. All the walls of the entire cavity are covered by mucous membrane, imbedded in the substance of which are innumerable glands secreting mucus, which secretion is mixed with the saliva.

This is an important fact in the unfolding of the present view of the subject,—that there are contained in all of the mucosa of the mouth glands at all points secreting mucin.

The floor of the inner general cavity, inclosed by the teeth and gums, contains another,—a box-like cavity,—of which the gum-covered alveolar ridge and teeth form the greater part of the periphery.

The reflection of the mucous membrane of the base of the tongue, with that of the floor of the mouth, is its posterior boundary, the floor of the mouth, its movable base; and the under-surface of the tongue, its movable roof. Into this cavity are poured the secretions of the submaxillary and sublingual glands,—secretions containing comparatively large amounts of mucin and calcium phosphate and carbonate.

The great external cavity is a crescent having a thin body; its inner wall, the teeth and alveolar walls; its outer encasement, the soft tissues; the mucous membrane covering the orbicularis oris, buccinator, and the other lip-moving muscles.

The walls of these cavities have occasional periods for rest. When in movement the fluid contents are agitated, and the muscular boundaries by their action sweep the surfaces of the immovable walls.

The tip of the tongue has a lateral sweep from about the lingual surface of first molar of one side to that of first molar of the other.

The buccal and labial aspects of the anterior teeth are swept by the action of the extended and bent tip of the tongue. It will be seen that at the lingual aspect of the teeth, at the junction of gum and teeth, the contact of the tongue with gum and teeth leaves a V-shaped space. There are also similarly shaped spaces made by the peculiar contact of the teeth themselves.

The palatal surfaces of the superior teeth are swept quite thoroughly by the tongue,—their labial and buccal aspects almost equally as well,—except that on the buccal surfaces the action ends at about the junction of the first and second superior molars.

The movement of the sides of the tongue sweep clear the lingual walls of the inferior molars, except at the angle of junction between the gums and the teeth.

The movements of the lips and cheeks sweep the anterior walls of the teeth, except at the cervices of the inferior incisors, and the upper incisors, and of the superior molars. It is seen, therefore, that the angular spaces marking the junctions of gums and teeth are less subjected to this cleansing by muscular action than are the surfaces in general. The same mechanical forces would tend to drive any pasty material into the interstices between the teeth.

In addition to this purely mechanical cleansing, the fluid contents of the mouth are, through the same movements, kept in agitation, and are driven about into all open spaces, cleansing by irrigation.

When the muscles are at rest, there is a space between the mucous membrane covering the buccal muscles and the buccal faces of the superior molars. There is formed a pocket, the line of contact of the cheek with the first molar marking its forward extremity, that with the third molar its posterior, the deepest part of the pocket being opposite the superior second molar, into which the secretion of the parotid gland is poured

After all of the food-debris which is removable by the mechanical cleansing through the movements of the tongue, and by the irrigating action of the fluids of the mouth, has been swept away, there will be found more or less remnants clinging to surfaces and packed into interstices.

After eating, man, in common with other animals, sets in action a series of muscular movements with a view to remove food-fragments. Extraordinary tongue movements are made; the buccal and labial muscles are worked alternately, removing mechanically much debris, the saliva aiding in washing some of the material away; and, in addition, a suction is created which draws from between well-formed teeth much of the waste material. But, despite this, the cleansing is not complete.

The next step is an examination of the nature, the composition of this debris.

A fact which has no doubt impressed most of us is, that it is only man, and animals fed upon the food used by man, that are affected, at least in any marked degree, by dental caries and concretions upon the teeth. It is a natural inference, therefore, that the sources of these disorders are in a great measure due to food-habit.

Among the undomesticated, and among some domesticated animals, the food is taken in a raw state. In the herbivora the food is mainly carbohydrates, inclosed in great part in the tough fibrous structures of plants. When grain is eaten, but a small amount of debris remains. During the mastication of these substances the fibrous structures of the food serve as a means for mechanical cleansing. The starchy foods do not appear to have a tendency to mass. The starch is gradually set free from its envelope and ptyalized, leaving a mass of gluten, coherent and not pasty, and from which no debris remains.

In the carnivora, fleshy foods, when eaten in a natural state, are in such a condition that the muscular and fibrous tissues have no disposition to break or tear in fine fragments, and they thus have little or no tendency to pack, even were the teeth of carnivora not shaped as they are, to disfavor accumulations of debris.

The operation of cooking produces radical changes in the condition of foods. The cellulose covering of the cells, inclosing starch-granules, is burst; many varieties of starchy food are reduced to a pasty condition; the fibrous stems of plants are made friable,—a condition favoring retention in interstices. Human beings use a greater proportion of sugar than other animals; that is, use as a raw material a chemical substance which, with most animals, is a product of partial digestion.

Fleshy foods, by cooking, are made more tender and friable,—the solid fats are melted so that the neutral fats, palmitan and stearin, are taken in part as semi-liquids, not solids; and, it may be, have some alteration of their chemical composition. So that after mastication, small portions of muscular tissue and of hardened fats adhere to the surfaces of the teeth and pack into spaces.

It is doubtless the fact that saponaceous dentifrices, by removing these fatty deposits, give to the mouth a sense of cleanliness, which prompts many persons to use these preparations in preference to simple powders.

Dr. Miller's researches as to the etiology of dental caries, together with the fact that this is the most common of all diseases affecting mankind and, occasionally, lower animals, leave no doubt as to the primary cause of the disease. It is due to the action of a solvent, lactic acid; this body the product of a specific fermentation, set up through the agency of definite micro-organisms which, according to Pasteur, in a mixture containing nitrogenous material and carbohydrates, split the latter up into lactic acid: $C_6H_{12}O_6$ becoming $2\ C_3H_6O_3$; the nitrogenous matter serving for the nutrition of the organisms. Troussart also mentions specifically that lactic fermentation requires the presence of proteid matters. He also calls attention to the common bacteriological datum, that the fermentive action is self-limited; that it is checked by formation of lactic acid. Also, that a slightly alkaline medium is most suitable for the propagation of the lactic ferment.

Unquestionably in some mouths the lactic fermentation is accompanied or followed by more or less of butyric fermentation. Collections of food debris form the foci of of development for the fermentation inaugurated by these organisms; so that the use of food leaving debris which masses and packs in inaccessible places, is the primary factor, the predisposing cause, in the fermentation. The butyric fermentation follows upon the lactic, and in many cases, food deposits long retained are found to be the foci of putrefactive decomposition.

In connection with the matter, I have noted that in some gingival disorders the putrefactive decomposition appears to occur, without the transition fermentations.

Food which does not leave debris about and between the teeth offers no soil for the development of the micro-organisms. As the operation of cooking is that producing this difference of condition in food-stuffs, it is that which is responsible, at least in a great measure, for the production of lactic fermentations in the oral cavity.

Differences of oral condition no doubt modify the activity of fermentative processes, hence in the amount of acid formed. Disease-conditions, whether purely local or manifestations of other disorders,—any grade or variety of catarrhal stomatitis,—form a suitable soil for the activity of ferments.

In addition to this result, catarrhal processes are associated with a swelling of the tissues, an increased exudation into the perivascular spaces causes the epithelial cells to swell by imbibition; the secretion of the glands is increased and modified; there is a visible swelling of the membrane affected, about the necks of the teeth. According to the grade and variety of the stomatitis, the swelling causes the formation of pockets, of variable depth, due to what is known as the dental ligament resisting detachment and the mucous membrane swelling around it.

We have examined now two of the factors involved,—first, the fluid, the *origo materiæ*; second, the cavity into which this is poured, together with contributions made by the glands of its walls, and also some of the adventitious matters which are suspended in the combined fluids.

The condition is: A fluid containing, as its greater portion of solids, calcium salts and mucin, in solution, is poured into the cavity, containing fluid; at several situations of the cavity, lactic fermentation is in progress. In addition to this, the places of lactic fermentation have, as one wall, a membrane containing mucin-secreting glands, and the general fluid is in consequence made acid in reaction.

This is a condition, some degree of which is almost universal. It is subject to gradations in different individuals, and, indeed, in the same individual.

The third inquiry as to the nature of the products discussed. These are accretions varying in degree of hardness from that of a granular mass, less hard than plaster of Paris, to the stony concretions found at times beneath the borders of the gum line, and approximating white coral in hardness. In color, they range from light yellow to dark green. In amount, from small scaly particles to masses in which several teeth are imbedded, so as to make the outlines of the several teeth indistinguishable. The lighter the collections are in color, the softer or more friable they are; the darker they are, the more dense; or the more dense they become, the harder they are.

There appear to be three classes of the calculi,—those of the variety usually found upon the inferior incisors; second, those upon the buccal faces of molars; and third, the green deposits, some part or all of which are beneath the margin of the gum. Judging from my observations thus far, I believe the latter are due, at least in great part, to the altered secretion of the gingival glands; some alteration in the usual composition of the colloid medium producing modification of the calculus. They are formed more slowly than the others, and it appears that they are produced in some cases *after* the formation of yellow calculi. My own interpretation of this is, that the yellow calculus causes nutritive disturbance in the small glands, and according to the grade of this disturbance, ranging from irritative activity to pus-formation, will be the character of the resulting calculus.

The light colored and softer masses have a predilection for two positions at the linguo-cervical aspects of the inferior incisors, to some extent the labio-cervices of the same teeth, on a line with the openings of the ducts of the submaxillary and sublingual glands.

Upon the buccal surfaces of the superior molars, opposite the opening of the ducts of the parotid glands, the dark, hard deposits are usually, or almost always, confined to the crevices of the teeth projecting into or from the sharp angle of junction between the teeth and gums.

It is not known to the writer that any separate analyses have been made of these several varieties of calculi. Dark-colored, dense, and hard specimens tested by the writer have given, upon heating, a strong animal odor, leaving a debris of some mineral matter and carbon; the mineral matter perfectly soluble in dilute nitric acid, with but little effervescence, calcium phosphate probably. Occasionally there was a faint response to the murexid test. The yellow deposits behaved in a similar manner. The crude analysis of the writer showed no marked difference in the composition of the several varieties.

Harlan, "American System of Dentistry," vol. ii, quoting Schehevetskey, gives as an analysis of the deposits:

Water and organic matter	22.07
Magnesium phosphate	1.07
Calcium phosphate	67.18
" carbonate	8.13
" fluoride	1.55

Nine-tenths of the deposits is composed of calcium phosphate, water, and organic matter. It has been determined that the 22.07 per cent. is composed in great part of mucin. (I have seen this stated, but cannot recall now whose analysis mentions the mucin.)

The problem is to determine the interactions in the two factors which stand in causal relation to the third. Why should these deposits occur? The following experiment appears to furnish a reasonable basis for the formation of a hypothesis which, it is hoped, will through further investigation ultimately throw more light on this subject.

Place in a test-tube two inches or more of saliva,— a fluid holding in suspension lime-salts, mucin and an amount of CO_2. Over this pour one or two drops of a ten per cent solution of lactic acid. Almost immediately a turbidity of the contents of the test-tube is noticed. This gradually but quite rapidly resolves itself into a coagulum, extending as a core through the fluid; it slowly contracts, and, in contracting, rises until it floats upon the surface. If the saliva has been ejected for some time, the salts of calcium are beginning to precipitate. In the condensation of the coagulum the suspended material is entangled in its meshes, and rises as part of the coagulum; perhaps a portion of the calcium phosphate being converted into a lacto-phosphate.

(To be continued.)

ARTICLE III.

A FEW NOTES ON DENTAL PROSTHETICS.

BY S. GLOBENSKY, L. D. S., MONTREAL.

Although we must regard the necessity for artificial dentures as great a reproach to dental practice as the necessity for surgery is to the general practitioner, yet we are forced to admit that prosthetics and surgery are indispensable, and that it is our duty to raise them to the highest possible perfection.

There are two sides to the question as to whether or not the introduction of vulcanite has been a curse to our profession. I am disposed to believe that students are made now in more haste than when artificial substitutes were confined to the more difficult bases of gold and platinum; and I am also disposed to believe that there is a much larger percentage of rude and unskilful work put into the mouths of patients. It is a bad sign of the times when cheapness is the chief object of attainment. We know that in all other branches of industrial art mere cheapness is followed by inferior production. Yet it must be recognized, on the other hand, that vulcanite has brought artificial substitutes more within the reach of the middling and the poorer classes; and yet, for this very reason, I am disposed to believe that it has made them more indifferent to the preservation of the natural teeth.

However, we cannot escape the fact that the public demand this class of dentistry, and it occurs to me that I may be permitted to suggest a few points mainly directed to the treatment of the mouth before inserting sets.

First of all, I would ask your attention to those cases where the alveolus has undue prominence, sometimes so as to cause positive disfiguration, protrusion of the lips and excessive projection of the teeth. It is a well-known fact that after extraction and the usual absorption of the alveolus, extending over a year, there remains an ugly exhibition of structure, to which it is sometimes impossible, and at all times difficult, to adapt an artistic set that will conceal its own art. Especially is this true, whether we use plain or gum teeth. If it is impossible to use the latter, or elevate the lip under the nostril by pink vulcanite—which, of course, turns dark and is a poor substitute for porcelain gum—then the depressions under and on each side of the nostrils, due to the removal of the long roots of the cuspids, make a permanent deformity. What shall we do in these cases?

1. As a rule, the cuspid roots are perhaps the most solidly fixed in the maxillary. As a rule, they can be easier treated for their preservation, because nature seems to resent their removal. I see no reason why it would not be wiser to excise than to extract their crowns, treat and fill them, and insert the set over the roots. As a rule, I think that the need for gum-teeth would not then be so urgent. Of course, to every rule there are exceptions. In case of such treatment, the patient should be instructed to have the roots examined once a year, for fear of elongation and bearing too much upon and weakening the plate.

2. There are very prominent protrusions which

would be better treated surgically. After the teeth are extracted, and the gum-line and alveolus border still hang below the lip, there is no reason why the former may not be dissected from the alveolus, and the latter excised or cut down by forceps. In fact, the prospect of any undue protrusion after entire absorption can be effectually prevented by this precautionary surgery, and no possible injury inflicted upon the patient.

You will observe that I have not introduced any reference to the opportunities for crown and bridge work, as my object is to deal exclusively with the average demands upon the average practitioner and the means of the average patient.

3. It is not by any means a novel treatment to take an impression for a number of teeth before their extraction, cut them off the plaster model, set them up, and have them ready for insertion the moment they are extracted. But this has been largely limited to partial dentures. There is no reason why it may not be extended successfully for entire sets, if a good impression is secured, and the plaster teeth carefully cut from the model. It enables you also to replace the teeth, one by one, on the model, precisely in the position where nature puts them, and, after some experience, it will be easier to do this than to work upon the ragged plaster impression of wounded gaps, left after the forceps have been used. It will, too, be observed, that this is an advantage in the case of the extra-prominent mouths of which I have spoken. It is a fact that a set made in such a way may be inserted a few minutes after the teeth are all extracted, and worn without alteration for four or five years.

4. I attribute most fractures of the alveolus to hasty and rough attempts to extract. Of course, there are cases of distortion of roots, of exostosis, of osseous union with the socket, which makes the exception. But it is not difficult to learn, by previous examination, the condition of solidity of the teeth in the maxillary. In cases where this

is very marked, it will follow that if the cuspids have to be extracted they will likely be the most difficult. Now, in order to avoid fractures, either of the teeth or of the processes, it is a wise precaution, if an anæsthetic can be prolonged, to begin at the cuspids and rapidly follow to the others, especially the first and second molars, and firmly twist or shake these teeth. You see, the object is to loosen the pericementum, which instaneously inflames, and within a minute the firmest tooth will much earier yield to the applied force of absolute extraction. It is a wrong principle to persist in tugging at an extremely difficult and solid tooth, risking its fracture and that of the surrounding alveolus. It is wiser to be slow and sure.

My attention has been drawn to these facts by observing a good deal of butchery in the human mouth, caused by ignorance and want of skill. Students get the idea that any one can extract a tooth, and, for some curious reason, anyone seems at liberty in the United States and Canada to do so, whether they do it with a piece of cord or a pair of tongs, and no matter whether they break the tooth, the alveolus, or the jaw! The result is that scientific surgery in this branch is rare, and as Heaven seems to take care of the fools who do not know enough to take care of themselves, much of this dental butchery has no serious result. On the other hand, the mouth is often disfigured for life. We find patients, who have been in those abbatoirs, with splintered sockets, torn gums and lips or tongue, inflamed mucous membrane, and. instead of a uniformly healed ridge, one of depressions and deformity. For this reason, I do not favor the use, in cases where extraction is seen to be difficult and prolonged, of anæsthetics which oblige us to hurry the operation.

I regret, Mr. Chairman and gentlemen, that I have been obliged to limit my remarks to these few pages, as I feel sure that they must touch upon the daily observation of each one of you, as well as of myself.—*Dominion Dental Jonrnal.*

ARTICLE IV.

ANTISEPSIS.

BY J. M. SPEAR, M. D., CUMBERLAND, MD.

Read before the Tri-State Medical Association of Western Maryland, Western Pennsylvania and West Virginia, at Cumberland; Md, December, 12, 1895.

I conceive that the three most important subjects for the railroad surgeon's consideration are, named in the order of their importance, hemorrhage, shock and antisepsis. As the second mentioned subject has been ably discussed at this meeting, and the first mentioned, incidentally, in connection with the subject of shock, I have concluded to make the third the subject of this paper.

While I have admitted that antisepsis occupies third place in importance, I do so under protest and on the grounds that hemorrhage and shock require more activity and energy to avert an impending danger, but, after all, I believe that more deaths occur from a disregard of the principles of antisepsis than would result from all cases of hemorrhage and shock together, though they were left wholly untreated.

As a further excuse for, and as further extenuating circumstances for the crime of offering a paper on so anemic a subject, a subject so well understood and so largely discussed as antisepsis, I must say that I fear many railroad surgeons attach too little importance to its principles, or are careless as to the proper execution of them.

Schwann, in sowing the seed of the germ theory, in the year 1837, made it possible to construct the magnificent superstructure of antiseps's, which has since been built upon that foundation, and it is well for us to ever bear in mind that every detail of antisepsis has for its object the destruction of germs and that asepsis has for its object the protection of the tissues from inoculation with germs.

Long before the recognition of the germ theory we used creosote as a preservative of meats, we used heat as a preservative of fruits, etc., and we used quinine and mercury for their known curative effects in certain diseases, without the knowledge that they all acted as germicides but now, under the searchlight of modern science, we understand their modus operandi, which enables us to apply these and a large number of their rivals more scientifically.

Since carbolic acid volunteered its services, twenty-five or thirty years ago, the ranks of the antiseptic army has greatly swelled and has marched through the medical and surgical field fighting its battles with death and disease, holding the citadel against the pathogenic onslaught until many diseases have almost or quite disappeared from the face of the earth. Hospital gangrene, once the bane of the surgeon, has entirely disappeared, puerperal fever has practically become a disease of the past, the mortality being from all cases of sepsis in four of the largest maternity hospitals in New York City, computed on over four thousand cases, less than one eighth of one per cent., whereas, previous to the introduction of antiseptic precautions in 1883 by Dr. Garrigues, the mortality varied at different periods from five to twenty per cent.

But it is in the field of general surgery that antisepsis finds the widest application. There, too, it has contributed wonderfully to progress. Previous to the last thirty years (antedating the advent of antiseptics) opening one of the large cavities of the trunk or a wound penetrating the brain was looked upon as being almost necessarily fatal, and the opening of a joint was regarded as certainly fatal to the integrity and usefulness of that joint; but now we enter these cavities with impunity and count on perfect motion in the latter cases. So lightly is an exploratory operation of the abdominal cavity regarded by some specialists, that I have heard one say that the operation was no more dangerous than vaccination.

Our experience under the antiseptic regime emboldens us to undertake, successfully, too, operations that the older surgeons would regard as impossibilities. All the different processes of grafting with skin, sponge, muscle, bone, cornea, etc., are only made possible through the educational influence incidental to the introduction of the antiseptic procedure. In the present state of our knowledge it becomes our duty in all cases of fracture of the skull with depression, penetration, hemorrhage, or symptoms of compression, to trephine, elevate, clean and antisepticize, and in all cases of penetration of the larger cavities or severe injury to viscera without penetration it is our duty to enter these cavities, arrest hemorrhage, remove foreign substances, stitch up rents, clean and sterilize in order that the patient may have the best possible chance for his life.

In fractures where the bones cannot be coapted or cannot be maintained in coaptation, it is allowable and proper, under antiseptic precautions, to cut down upon, approximate and retain, by wiring or other mechanical means, the separated fragments. This applies with particular force to fracture of the patella where, although such a process involves the joint, nothing short of drilling and wiring together the fragments promise the best results. It is questionable whether we should not in all cases of fracture or dislocation of the spine, when other means fail to reduce it, cut down upon the injury, remove spiculæ of bone and adjust by sight. This operation, I believe, has been successfully performed by at least one member of our society. Why should it not be tried in all such cases, for can you be summoned to a more hopeless condition than a man with an injury involving displacement of the vertebrae, causing complete paralysis of the parts below? Do you ever feel more helpless in any case?

The suturing together of muscles, ligaments, nerves; and even vessels, have become practical operations, and quite recently an operator has sutured the tendon of one mobile muscle to the tendon of a paralyzed muscle in order to make it do vicarious duty. Such progress is due largely to the beneficient results of antisepsis.

The strict application of Lister's discovery to railroad surgery is the greatest element of conservatism. The lives saved and the functions preserved to parts by it that would have been sacrificed under the old septic treatment cannot be estimated. Neither can the time saved to the employee, as well as to the surgeon, and the money saved to the company by the shorter duration of the benefit period be calculated, to say nothing of the suffering and inconvenience to the patient and his friends.

It is not necessary to add words to what has already been said to prove to this association the benefits and advantages of antisepsis, but it would be time better spent in inquiring how we are to make antisepsis practical in railroad surgery. We must acknowledge that the railroad surgeon labors under great disadvantages. He often has to give the first aid in an open field or may have to perform an important operation in a dirty warehouse, caboose or watchbox. The parts to be treated surgically are always dirty and usually greasy, and the surgeon may find himself limited in other accommodations and appliances without proper assistance.

Under such circumstances the surgeon is apt to excuse himself upon these grounds if he fails to get an aseptic result. It may not always be possible to get the much-desired condition, but with the exercise of good judgment and great painstaking we may generally succeed, and I shall devote the remainder of this paper to a consideration of the means to be employed to reach this coveted goal.

Although the technique of antiseptic surgery, as treated by some authorities, seems quite complicated, it is capable of being reduced to a very simple procedure; and, although there are scores of chemicals employed, one of a selection of three or four of them will be found sufficient to meet any emergency, With iodoform, boracic acid, bichloride of mercury and carbolic acid there is scarcely anything to be desired, unless you class the cleansing agents, such as water, soap, alcohol, ether, etc., along with them. The surgeon should not only be impressed with the idea that cleanliness is godliness, but that it is good surgery and without it we cannot have tolerable surgery.

Cleanliness is cheap, too. Any surgeon can have clean hands, clean instruments and a fair supply of antiseptic dressings with him for all emergency cases. He should have his kit packed and ready to start at a moment's warning. The receptacle need not be fine or expensive. That which I use myself is a cheap canvas telescopic traveling valise. It has the advantage of adapting itself to the bulk of material it is desired to encase. It should contain anesthetics, anodynes, antiseptics, stimulants, instruments, nested enameled pans, towels, ligatures, sutures, bandages and other dressing material, all sterilized, and, what I consider very important, two large bottles, one containing sterile water and the other a standard solution of bichloride of mercury, for you will often be so situated that you cannot procure sterile or even pure water. A few tooth powder or pepper boxes for your antiseptic powders are better than some of the more expensive, and a few feet of half-inch rubber tubing makes the best tourniquets. It matters but little as to the size and weight of your package, within certain limits, because you are generally conveyed to the scene of disaster by rail. So equipped one may feel himself pretty well prepared for any case that is likely to fall to his care, but of course where practicable all serious cases should be removed to a hospital.

The large majority of railroad cases require what might be called only routine surgical treatment. Something like this: The arrest of hemorrhage by simple means, if possible; cleanse the wounds and surrounding parts by water and soap (if necessary to remove grease with kerosene, alcohol or ether) and then with a bichloride solution; perform any necessary operation, again wash with an antiseptic solution and proceed to dress by dusting the parts with iodoform or boracic acid or a mixture of the two; apply aseptic gauze, cotton and bandage. If you have succeeded in suppressing all the hemorrhage, rendered aseptic the parts and have used aseptic absorbable ligatures and sutures this is the only dressing that is likely to be required during the whole process of healing.

My rule for after-treatment following amputations or lacerations is to dress the wound as above indicated, and I seldom find it necessary to disturb it for two or three weeks, at the expiration of such time I usually find it well healed. Of course, general symptoms of hemorrhage may indicate that something has gone amiss and require interference sooner. Above all things avoid adhesive plates and polluted water. Dry dressings have served me best.

The large majority of the injuries we are called upon to treat are not serious, but for that reason it is no less important to give them the best possible treatment, which include strict antisepsis. It makes a vast difference to the company who pays benefits whether the average loss of time of the injured be three weeks, or six weeks, which ratio would about represent the difference between cases treated antiseptically and those treated otherwise. I have seen one after an antiseptic amputation above the elbow return to work in eight days, while one suffering a similar mutilation accompanied by the former usual course of suppuration, would hardly be expected to return to work in as many weeks.

One antiseptic I wish to mention particularly is a chemical combination of gum camphor and carbolic acid in equal proportions. It is well to make the proportion of camphor slightly in excess to be sure that there is no free carbolic acid present. It is not only a powerful antiseptic but is also a powerful local anesthetic as well, and is practically unirritating and non-poisonous withal. Its range of application is wide. It may be applied to mucous or raw surfaces or inflamed integuments. One application will cure ring-worm. I think it would be valuable in rhus toxicodendron poisoning, erysipelas and eczema.

In burns, I have found it a most excellent application, its anodyne properties being not the least important. In extensive burns of all degrees, I have applied it full strength with immediate relief to suffering and without the manifestation of toxic symptoms, but perhaps mixed with six or eight parts of olive oil it would be as effective.

It is insoluble in water, glycerine, or linseed oil, but is a solvent of various chemicals, such as camphor, which it dissolves in large proportion; menthol and chloral, each of which it dissolves in equal parts; iodine, in the proportion of 1 in 30; cocaine, 1 in 10; and morphia, 1 in 30. It is itself soluble in olive oil in the proportion of 1 to 2, and vaseline in the proportion of 1 to 3. In alcohol it dissolves freely.

Now, gentlemen, I would say in conclusion, that, while I have been unable to present anything particularly new on this subject, if I have succeeded in awakening any who are inclined to be lax in antiseptic practice to a realization of their supreme importance, or have been able to point out simple and practical means for their application the object sought for by this paper will have been attained. —*Md. Med. Journal.*

Editorial, Etc.

SYSTEMIC TREATMENT BY DENTISTS.—The physician and the dentist have necessarily many practical duties in common, but each has a clearly defined limitation of sphere requiring specific direction of that general culture which both should possess. It is not the purpose in any thing that is said to advise the dentist to usurp the office of the physician, whose therapeutics is restricted to hygiene and materia medica; but it cannot be denied that disease of the body involves an unhealthy condition of the mouth. Those best qualified to judge, the men endeavoring to raise dentistry to the sphere it should occupy, have always deemed a full medical and surgical education desirable by practitioners devoting themselves to dentistry. Oculists and aurists and obstetricians or other physicians or surgeons restricting themselves to or selecting one branch of practice in preference to another are at the same time fully-qualified medical men; and as medical men they have objected to what they term "fractionally-qualified" being made to appear on the equal footing with themselves. Nevertheless it must not be forgotten that the dentist often waits upon patients who need systemic treatment more than treatment of the teeth, and the first effort in the treatment of caries should be directed to the predisposing and exciting causes, constitutional as well as local. The teeth are a part of the animal economy and they are therefore more or less influenced by the state of the general health. In many persons, especially those who have become run down, there is more or less nervous irritation, often without any perceptible disturbance in the teeth themselves which very decidedly affects the health in one way or another. The connection of the teeth with various constitutional diseases should not be overlooked.

What Dr. Louis Jack observes respecting the uncertainty of dental service, should be persistently kept before the minds of patients. He says: "In some instances comparatively indifferent operations are successful, and in other cases those performed with the greatest care have proven failures. In the former correct physiological function may have become re-established, and in the latter, either from defective hygienic conditions or from chronic impairment of function, the active causes of carious action have continued. Hence the failures of operations on the teeth is not always an evidence of deficient skill."

The dentist is too apt to confine himself to his branch of study and to ignore the human system as a whole. He should consider other things besides enamel and dentine and pulp. The educated dentist should by scientific, therapeutic and surgical remedies as well as by mechanical applications combat presenting conditions. Says Dr. A. O. Hunt, in discussing the softening about the margins of fillings:

"Almost any of the disturbances of the liver, kidneys, lungs, etc. would cause a change in the secretions of the mouth. One case which occurred to him at the moment was that of a gentleman, 55 or 60 years of age, in which this softening around fillings in good teeth was observed. A portion of the decay was removed and sent over to the laboratory for examination. The report of

the examiner was that the bacteria of pulmonary phthisis was present in large numbers, for which he was not looking, although he did expect evidence of some constitutional difficulty, as diabetes or Bright's disease."

It seems consistent with the ethics of the profession to note that a general and nerve tonic may be of value if prescribed in dental practice. R. G.

Monthly Summary.

SPITTING IN PUBLIC PLACES has become not only an intolerable nuisance, but a menance to health. It is well known that germs from dried sputum mixed with atmospheric air are easily respired, thus making consumption a communicable disease. The Board of Health of the city of New York, it is reported, will soon take action upon a report made by Dr. Herman M. Biggs, pathologist, and Dr. T. Mitchell Prudden, consulting pathologist, to the board. The report asseverates that it is time to put a stop to the filthy and disgusting practice of spitting on the floors of public buildings and conveyances. The report declares that it has long since been shown that the chief means for the transmission of consumption is the dried and pulverized sputum of persons suffering from this disease. Diphtheria, influenza and other diseases, the report says, are also easily communicated in this way during certain stages of the diseases. Catarrhal affections may be communicated through dried spittle mixed dust. These germs are likely to be gathered on the feet and on the skirts of women, the report says, and taken into private houses, where the most perfect ventilation will not stay their evil effect.

The report recommends the adoption of the following resolutions:

Resolved, That notices be posted in all public places and in all surface and elevated cars in this city, signed by the Board of Health, warning passengers against expectoration upon the floors of these conveyances, and further, that similar notices be posted in the stations of the elevated roads, warning against expectoration upon the platforms and stairs or on the floors of the stations.

Resolved, That similar notices be posted in the halls and assembly rooms of all municipal and federal buildings in the city.

Resolved, That the municipal authorities be requested to provide sufficient and proper receptacles for expectoration for such public places as are in their control, and that the managers of the elevated roads be requested to provide similar receptacles sufficient in number for their stations and platforms, and that in all cases these receptacles shall be kept in a cleanly condition.

Resolved, That the officers of the Manhattan elevated road be requested to give peremptory orders to their guards to refrain from,and to prevent so far as possible, expectorations from the trains into the streets, and to secure the enforcement of these orders.

In many cities, notices are posted in the street cars requesting passengers not to spit upon the floor, but until conductors are empowered with special police authority to enforce the regulation it is practically a dead letter. We think the time has arrived for the board of health to take such action as will prevent spitting in public places.—*Buffalo Medical Journal.*

INFILTRATION ANESTHESIA.—One of the great dangers of major operations is the administration of the anesthetic even when the anesthetists is skilled, and many a piece of surgery well done ends fatally through the evil effects of the sleep-producer. In minor surgery timid persons cannot stand even the momentary pain and some, too often of the so-called stronger sex, demand a total unconsciousness rather than submit to the momentary pain of an abscess opening or slight operation on the eye.

The use of cocaine has in a measure been of great assistance in these small operations, but of late Schleich of Berlin, in his article on "Schmerzlose Operationen," has devised a means of making the skin anesthetic for a short time in minor operations. Wurdemann, in reviewing this work in the

Journal of the American Medical Association, gives his experience with this new method in diseases of the eye, and Van Hook, in the *Medical News*, reports the result of his work in general surgery.

Schleich after some experimentation found that very small quantities of cocaine and morphia dissolved in a 0.2 per cent. salt solution and injected into and not under the skin, produced a localized anesthesia which lasted from ten to twenty minutes and often longer, allowing of cutting with no pain at all.

The skin is first made aseptic, then pinched up and the sterilized needle of the syringe containing the solution, which should be cold, is passed obliquely under the epidermis and a few drops injected until a white elevated wheal appears. The needle is withdrawn and inserted at the edge of this wheal and so on until an area as large as may be desired is made anesthetic. If the spot to be cut is first cooled by an ether or rhigolene spray, if it is the skin, and by a strong solution of carbolic acid, if it is the mucous membrane, the prick of the needle is not even felt, but in the case of the small needle which should be used, the pain is almost nil, especially when the skin is pinched. Wurdemann has used this method in operations about the eye and also in abscesses and felons with success. Schleich has even done celiotomies with it, but others might not dare to follow this lead.

The solution most usually employed is a grain and a half of cocain, one-third of a grain of morphia and three grains of sodium chloride in three ounces and three drachms of sterilized water. Two other solutions, one containing double the quantity of cocaine and the other one-tenth the amount, are also used.

The value of this operation is in the technique, and stress is laid on the point that the needle must not go beneath the skin. This process is capable of development and is worthy of a careful trial.—*Md, Med. Journvl.*

TO SECURE RUBBER DAM.—A year or so ago Dr. Hetrick gave a hint as to the value of sand-arach varnish to secure rubber dam to the teeth, instead of the painful silk ligature. It was one of the most valuable items I ever received, and if it has not been universally adopted it should be. It is absolutely demanded that dentistry should be made as easy as possible, and any neglect is scarcely less than criminal.

Many patients in a country practice are so situated that a prolonged course of treatment for aching or ulcerated teeth is out of the question. When operating for such a one, and an exposed living nerve is found, it can almost always be successfully removed at once by injecting a solution of cocaine, under strong pressure, so that it is forced up to the apex of the root, otherwise the removal will not be painless. When a fragment of these fresh pulps resist all efforts of the broach to effect removal, the heating of the Evans root-canal dryer and passing it up into the root brings the fragment away at once. The potassium and sodium compound of Dr. Schrier will also disintegrate one of these fresh pulps so it can be taken out at once.—Dr. Bergstresser in *Microcosm.*

CLEANING TEETH.—Many patients do not appreciate the cleaning of the teeth, because their dentists are in the habit of cleaning the teeth free, when there is no other work done. In thus donating this valuable service, the dentist receives no pecuniary return, and, indeed, very little thanks; for people are not disposed to value very highly what they get for nothing. On the subject of cleaning the teeth I think there is special need of public education People who appreciate the disastrous effects of caries, and who aim to have their teeth promptly filled on the appearance of cavities, are very often negligent about having them regularly cleaned, because they do not know the importance of this operation from a prophylactic standpoint. The patient is usually satisfied with a superficial cleaning of the anterior surface of the teeth.—J. W. O'Brien, in *Southern Dental Journal.*

TO RAISE THE STANDARD OF MEDICAL EDUCATION.— A meeting of the committee of the Association of the American Medical Colleges was recently held, and the following resolutions adopted, to present to the Association in June at San Francisco:

The committee agreed upon the following as necessary to admission to any of the seventy-one colleges forming the American Association:

English composition, in candidate's handwriting, not less than two hundred words, composition to include spelling, punctuation, paragraphing and construction. Examination in arithmetic, algebra through quadratics, and elementary physics. Latin to the extent of one year's study as indicated by Harkness's Latin Reader.

Graduates or matriculates of reputable colleges and high schools of the first grade, or normal schools established by State authority, or who have successfully passed the examination provided by the State of New York, may be exempt from the requirements named. Students deficient in one or more branches named as requirements shall have time until the beginning of the second year to make up such deficiency, provided, however, that students who fail in any two of the requirements in this second examination shall not be admitted to the second course.

A resolution was adopted to recommend to the Association that after the year 1895 no medical college shall be permitted to remain or become a member of the Association that does not provide either for a three-year course of eight months' study or a four-year course of not less than six months in each year.

A sub-committee was ordered to be appointed to prepare a curriculum of studies in the medical colleges providing for the minimum of time and lectures to be devoted to each one. This sub-committee will report to the general committee at the San Francisco convention.—"Southern Med. Record."

STERILIZATION OF DENTAL INSTRUMENTS.—The thorough and safe sterilization of dental and surgical instruments is a problem which is beset with no little difficulty. Most of our most potent antiseptic agents act detrimentally upon the steel surface, for which reason they must be excluded. High temperatures destroy or modify to a dangerous degree the delicate temper of many instruments, beside which the methods of heat sterilization require, in general, a special apparatus for the purpose, which adds complexity and difficulty to the process.

It has been shown by test and experience that the caustic alkalies, as well as their carbonates, possess marked germicidal properties. One of the most manageable and satisfactory agents of this class is liquor ammon. fort. Instruments soaked for a few minutes in a rather warm aqueous solution of ammonia are most beautifully cleansed thereby, without detriment to their polish or temper. We have no data bearing upon the relative efficacy of ammonia as a germicide, but believe it to be worthy of trial and scientific investigation in this relation.—*Cosmos.*

SALOL TOPICALLY.—Colombini ("British Medical Journal"). Dr. C. has been experimenting with regards to the local effects of salol dissolved in liquid vaselin. In the presence of alkaline fluids, or living tissues, salol appears to break up into salicylic and carbolic acids in the nascent state. When split up in this way, the author found that, while the good antiseptic action of each of the acids was manifested, their irritant action was absent. This, he thinks, is due either to the way in which they are set free, or to the small quantities of the acids evolved.

Clinically, it was found that salol in vaselin solution (the best solvent) did not irritate the skin or inflame ulcerated surfaces, which latter healed under the treatment without pain or local reaction.

The author therefore thinks there may be a useful field opened up in the local application of salol as a non-irritating and sufficiently powerful antiseptic.

A NEW SUBSTITUTE FOR GOLD.—A French technical paper, the *Journal det 'Horlogerie*, declares that a new amalgam has been discovered which is a wonderful substitute for gold. It consists of ninety-four parts of copper to six parts of antimony. The copper is melted and the antimony is then added. Once the two metals are sufficiently fused together, a little magnesium and carbonate of lime are added to increase the density of the material. The product can be drawn, wrought and soldered, just like gold, which it almost exactly resembles on being polished. Even when exposed to the action of ammoniacal salts or nitrous vapors it preserves its color. The cost of making it is about a shilling a pound avoirdupois.—*London News.*

IF we have confidence that we are a good dentist, we should surround ourselves with the evidence of our ability. A poverty-looking office is generally taken as the evidence of a poor dentist; untidiness as a slip-shod dentist; a dearth of literature as ignorance. We do not expect to find a clean dentist in an unclean office, an esthetic, approachable, genial fellow, in a dingy, musty, repulsive atmosphere; a pure, sympathetic, warm-hearted gentleman with a breath of tobacco smoke and stale beer. What we are is generally stamped on what we appear; in fact, what we appear to be is usually better than what we are, so that we have no excuse for a neglect that hides any good qualities we may possess.—*Items of Interest.*

SALT.—Under the Province of Gallicia, in Hungary, there exists a bed of pure rock salt 500 miles long, 20 miles wide and 250 feet in thickness. Consider what a sea once existed there, and how many ages of evaporation were required to deposit such a mass. A considerable portion of Western New York is underlaid by a great stratum of the same material. What effect has the abstraction of these immense quantities of salt had upon the condition of the sea water of to-day ?—"Pract. and Advertiser."

COAL OIL IN THE LABORATORY.—There is a little wrinkle that I have made use of for years, and that is the substitution of coal oil for other oils in the laboratory. Used freely on the oil stone it keeps the latter fresh and clean, and there is left upon it no film of steel covering the surface of the stone and lessening its effectiveness. Used upon lathes, it removes all these gummy collections of old lubricants, and cleans journals and all other surfaces quite as well or better than lye. It will remove many of the discoloring accumulations from the surfaces of fine wood-work. Use it to soak old instruments in, to remove rust, etc. It has a dozen uses.—H. H. B. in *Dental Cosmos.*

CHANGES IN NERVE-CELLS.—Lujano (*Lo Sperimento*, *University Med. Jour.*) concludes from experimentation that the activity of nerve-cells is accompanied by turgescence in the protoplasm of the cell substance. Fatigue produces a progressive diminution of the size of the cell. Ordinarily in moderate activity the nucleus does not change in volume, but in continued forced activity the changes induced are similar to those in the protoplasm, but not as marked. The first expression of cellular activity is thought to be an increase of chromatin, the late changes exhibit a diminution and diffuse distribution of it.

ARE RHUBARB LEAVES POISONOUS?—An inquest has just been held at Enfield, (London), upon a man, aged fifty-six, who had died after eating a pound and a half of rhubarb leaves boiled as a substitute for greens. A post-mortem was made, but it yielded no information.—*National Board of Health Magazine.*

PACIFIC COAST DENTAL CONGRESS.—The general committee of this body has determined that the next congress shall be held in San Francisco, in August, 1897, and that the American and Southern Dental Association shall be invited to meet at the same time and place, to hold separate or joint sessions as shall be deemed best.

THE WARM BATH IN INSOMNIA.—According to Dr. Eccles, the use of the warm bath for the purpose of producing sleep is very efficient if properly carried out. The bath should be administered in a room whose temperature is 65° to 70° F. The patient is made to stand with his head over the edge of the tub, and his head and face are then rapidly douched with water at 100° F. The cooling of the body by the air and the hot sponging of the head send the blood to the head, dilating the vessels of the entire brain. The entire body is then immersed, except, of course, the head, in a bath at 98° F., which is rapidly raised to a temperature of 105° to 110° In a few minutes the patient is taken from the bath, wrapped in warm blankets, and without exertion on his part, taken to his room. The blankets absorb the moisture; in his room the night clothes are put on, a warm bottle placed at his feet, and possibly some liquid food administered. The sedative and refreshing result is often most marked.—*The Sanitarian.*

Dr. Ferdinand Gorgas, Prof. of Principles of Dental Science, Surgery and Mechanism, University of Maryland, says: "My experience with Borine as a disinfectant, deodorizer and antiseptic has been very satisfactory both personally and in my practice."

Borine is termed the *Ideal Dental Antiseptic* possessing as it does in addition to its germicidal qualities those desirable ones of being *non-toxic and non-irritating.*

As a mouth wash it is without an equal. It hardens the gums, preserves the teeth and renders the breath pure and sweet. To wearers of artificial dentures it is an absolute necessity.

ACCIDENTS WITH NITRAT OF SILVER.—Table salt will neutralize nitrat of silver accidentally reaching the tissues or mucous membrane.—*Items of Interest.*

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ARTICLE I.

HARVARD ODONTOLOGICAL SOCIETY.

The regular monthly meeting of this society was held March 28, 1895, at Young's Hotel, President Dr. James Shepherd in the chair.

After the usual business meeting, Dr. Julius G. W. Werner read a paper upon the "Treatment of Decay in Approximate Surfaces of Bicuspids and Molars."

The following is an abstract of the discussion:

Dr. Stanley: I would like to ask Dr. Werner if his principal objection to the use of amalgam is the effect of discolored teeth?

Dr. Werner: My principal objections are the discoloration to tooth-substance, the homœopathic objection, the want of edge-strength, and arresting decay no better than gold.

Dr. Stanley: Does Dr. Werner contend that gold has a more preservative effect on the dentine of a tooth than amalgam?

Dr. Werner: I think it has fully as much, is nicer, cleaner, is a pure metal, hence more desirable than an alloy or a mixture of silver, tin, and mercury.

Dr. Stanley: Then why do you recommend tin in some instances?

Dr. Werner: Because we get an oxidation of the tin, a benefit, with no discoloration of tooth-substance, nor presence of mercury, as we have in amalgam.

Dr. Stanley: The amalgam that I use has a good percentage of tin in it. As I understand it, gold exerts only a mechanical effect on a tooth. In a combination filling, with amalgam at the cervical wall, the result will be better than from amalgam alone.

Dr. Werner: What makes you think that?

Dr. Stanley: The gold will remove all excess of mercury, and give it a better edge-strength.

Dr. Werner: Do your patients prefer amalgam?

Dr. Stanley: They prefer what I advocate, I do not advocate any one filling material over another, but the best material must be used for the case, according to my judgment, and that is what my patients accept.

Dr. Werner: Don't you think your judgment is often dictated by the amount of time, money, skill and labor connected with a case where you use amalgam?

Dr. Stanley: I look to the result to be obtained first, and then use what I think is going to serve my purpose best. It isn't necessary to fill the cavity four-fifths with amalgam. It is difficult to pack gold under the gum, and in a great many cases a plastic filling gives much more satisfactory results. These contour fillings for such cases are ideal on paper, but in a few years I think they will fail quicker than a combination with amalgam instead of gold alone.

Dr. Werner: Did you ever fill to contour a bicuspid with gold.

Dr. Stanley: You must be Joking, doctor; certainly I have. I have been in practice for ten years.

Dr. Werner: And has it kept it from decay?

Dr. Stanley: Yes.

Dr. Werner: Are you not satisfied with that?

Dr. Stanley: Yes; but I claim I have progressed from that. From all gold I have come to use combination fillings, which, in their proper places, are superior and more easily and expeditiously adapted.

I have used a steel matrix for a long time in the filling of approximal surfaces in bicuspids and molars, using soft gold at the cervical wall—sometimes absolutely non-cohesive gold. I use mainly, however, soft gold as it comes to us in cylinders; it can be made slightly cohesive by annealing. I have in a few cases used tin and gold at the cervical wall, but I do not recognize great advantage in tin and gold, excepting in very poor teeth.

There are cases where I would use amalgam at the cervical wall, though I have never practiced that method much. By the aid of the matrix I find it a comparatively simple matter to fill cavities of this kind, using a large percentage of soft gold about the walls and on the approximal surface, and what more satisfactory material is there at present in use? Who of us that have been in practice twenty years have not taken out non-cohesive gold fillings which have been in many years, and, although they were very ill-looking fillings, have been surprised to find how nicely the dentine has been preserved. The edges of the cavity have been rough and uneven, and the filling unsightly, and we have been prompted to take it out, perhaps, because of its unsightliness, but we have found that soft gold has preserved the tooth, and in strong teeth I do not know what better material we can use.

One who is not familiar with this method may perhaps imagine that it is a very tedious or laborious operation to fill a good sized approximal cavity in a bicuspid or molar. It *is* more trying than with a plastic, but the result is so much superior, so much more comfortable to the patient, that it would seem to me to very much outweigh the time and labor saved by putting in a plastic, which must of necessity be temporary. Really, the greater part of that filling can be placed in without the mallet and in rather large pieces after you commence, and I am surprised when I compare the time that it takes me now to place in a large compound bicuspid or molar filling to what it did when I first commenced. If I could have had the knowledge regarding this method at that time that I have to day, it would have saved me a great many hours of hard work and my patients much pain.

In regard to the matter of platinum and gold on the surface, I rarely use it, excepting where I am building down teeth that come to much wear. In cases where the molar teeth are gone, and the front teeth have to do double service, all the mastication being done by the front teeth, the gold will wear very rapidly. In those cases platinum and gold for the surface is very much more durable than pure gold. I have used platinum-gold in approximate surfaces in front teeth, but do not now. It is a little better color, perhaps, but where you get two approximal cavities coming together, the reflection is such as to give a dark appearance,—more than the pure gold,—so that my use of platinum and gold is very limited. I do not see any objection to using tin and gold if it is where it does not show even in the very strongest teeth.

Dr. Werner: There is one paragraph I wish particularly to call Dr. Briggs's attention to—namely, "where good judgment and favorable conditions dictate a permanent in distinction from a temporary or plastic filling." That covers, I think, all the questions of judgment that can be brought up. I am not to suppose the case in question and good judgment as both being absent. I have no doubt you use good judgment in your practice and you must not get the idea that I do not in mine. I believe firmly in the matrix, full contour, with gold and tin at the cervix, and not in amalgam.

Dr. Stanley: Do you use amalgam at all in your practice?

Dr. Werner: Very little.

Dr. Stanley: Supposing we take the posterior surface of a second molar, with the wisdom-tooth in position; it is decayed well up under the gum, and the tooth will stand a metal filling—how do you fill it?

Dr. Werner: I would fill such posterior surface in a second molar with gold, using at the cervical wall gold and tin, restore it with the use of the matrix to full contour, do it in a comparatively short time with comparative comfort to the patient.

Dr. Stanley: Of course, when a man has a theory, or hobby, or pet method, he becomes in a greater or less degree master of the technique that it requires to execute it, and I can understand how Dr. Werner, from his constant practice, might put in such a large contour filling, and build it up from the cervical wall with gold, in less time perhaps than the operator who does not believe in filling such cavities with gold alone. But I certainly could do it a great deal easier for myself and my patient, and I should have more confidence in the service of the filling, if it had amalgam at the cervical wall.

Dr. Werner: I think I am doing a better service for my patients when I restore an approximate surface to full contour with gold and tin at the cervix, than if I used amalgam, gutta-percha or cement, both as to arresting decay and general desirability.

Dr. Stanley: I should not for a moment think of putting cement in such a place, but amalgam for that place would be a permanent filling.

I believe most thoroughly in the use of the matrix, and I use it sometimes, even when I am putting in gutta-percha or cement fillings, for the preparation of approximal cavities in bicuspid teeth where I do not think they are ready for a gold filling. The success of those fillings, I believe, largely depends on the preparation of the cavity. The cavity should be just as thoroughly prepared for one material as another. The standard alloy hardens very quickly, and by the time you have finished the filling with gold, the amalgam has become so hard that you can polish with a strip without affecting the gold, and you have your contour fillings just the same.

Dr. Werner: How much time do you spend on a surface of that kind to fill with amalgam?

Dr. Stanley: I could not say—twenty minutes to half an hour, or longer; it depends on the case,

Dr. Werner: How much time afterwards in finishing?

Dr. Stanley: That also depends on the case. I finish it to the contour of the tooth. The matrix holds it there until it becomes hardened.

Dr. Werner: What becomes of the contour after you you remove the matrix?

Dr. Stanley: It stays there.

Dr. Werner: You can't finish the amalgam filling at that sitting?

Dr. Stanley: Oh, yes, you can; a thin, narrow strip will do it.

President Shepherd: I believe there is in the room a gentleman who has in his mouth an example of some of the work we have heard about to night. Will the gentleman tell us something about it?

Dr. Cheney: I don't know that I can say anything further than that they have been perfectly satisfactory and comfortable. I should be glad to show them to any one who cares to see them.

Dr. Ainsworth: I might explain that those fillings were put in at a clinic before the Vermont Society under this method five or six years ago, and I did not feel very sanguine of the results. One of them especially was very difficult, one I do not think a person has a license to clinic with and expect it to speak well for the method. It was in a superior bicuspid, well under the gum, with the nerve exposed, and I was in doubt at that time whether we should have trouble. The conditions were such that it was impossible to get the rubber on without putting on the matrix first. I should like to hear if that tooth has given any trouble since.

Dr. Cheney: I am glad to state that the root has never given me any trouble since the filling was put in. If you will remember, the pulp was first covered with varnish and cement.

Dr. Ainsworth: I remember there was something placed in to protect the pulp. It was thoroughly exposed, and I felt it was treading on delicate ground to fill such a tooth without removing the pulp.

Dr. Cheney: I have been very much interested in the paper of Dr. Werner, and am a thorough believer in contour work to protect the gingival margin. I am also quite a believer in the combination work. I believe a great many times; by using amalgam at the cervical wall, a very difficult case can be handled easier than with gold entire. In placing in those approximal fillings I have never used a matrix, but I have used soft gold at the cervical wall, and burnished it over the edge as well as I could, and then come down with slightly cohesive gold. I have seen some sore gums from not having the filling properly contoured—in fact, I had one or two cases in my own mouth which gave me considerable trouble from food working up there.

Dr. Chandler: Three or four years ago I was of the opinion that in a great many cases an amalgam filling was as good as a gold filling—I mean as regards restoring contour and comfort to the patient; but since I have seen Dr. Werner's work, I am very strongly in favor of the use of gold. It seems strange to me now that an operator should think of placing amalgam into those approximal cavities, leaving the edges of the cavities perfectly straight up and down, affording an opportunity for food to collect, and the edges of the cavity to become broken down to expose the dentine, when a full contour gold filling will not only protect the edges of the cavity and prevent the progress of decay, but be a comfort to the patient.

President Shepherd: Will Dr. Werner tell us why he prefers hand-pressure to the pressure of the mallet in connection with soft gold?

Dr. Werner: Because you condense the soft gold in a manner more comfortable to the patient. Hand-pressure is more thoroughly adapted to the condensation of the gold than the quick, hammering blow of the mallet, and with the assistance of the matrix the result is everything that could be desired.

President Shepherd: Is it as solid as a hammered gold filling?

Dr. Werner: I don't think that the hammered solidity is an advantage to the tooth; I think it is a decided disadvantage. I would, of course, hammer the very last portion of the gold, the portion that comes to the occluding surface, but nearly eight-tenths of the filling I would do with hand-pressure. When you learn how to use the matrix skillfully, the cervical wall portion that many now fill with amalgam they will fill with gold and like it better. I am not a believer in the Hanhemannian theory, but I do not like a filling of which mercury is an ingredient. There is a member here to-night who a year ago spoke of a case where he removed thirty-five amalgam fillings and replaced them with gutta-percha and cement. I have never in all my experience, which, including pupilage, covers nearly twenty-three years, seen a case where good judgment would seem to dictate the insertion of thirty-five gutta-percha fillings in one mouth. My professional sense of duty dictates to me, if the patient is willing and the tooth is strong enough, to put in the best and make the most lasting filling I can. Look at this typical case here, where the patient became absolutely disgusted with the imbecility of her previous dentist, who filled that approximate bicuspid surface with cement every six months, or year and a half at the longest. It was never thoroughly excavated. I think she has paid more for those oft-repeated cement fillings than a thorough full-contour matrix gold filling would have cost, and she has had none of the comfort and the protection of the gum that she would have had with a contour gold filling.

Dr. Stanley: In what form do you use your gold?

Dr. Werner: I use Williams's soft burnished gold cylinders. It is very pliable and gives a beautiful finish. It can be thoroughly condensed, and to me it is the most satisfactory for use with the matrix. I do not like a gold that is absolutely non cohesive.

President shepherd: Combination fillings have been referred to several times this evening. Perhaps Dr. Clapp will say a few words to us on that subject.

Dr. Clapp: I don't think it is necessary for me to say anything about combination fillings. You know how heartily I believe in them, and, as I have often said, it seems to me that I could not practice without them.

In regard to the paper, I have nothing to say except to offer my thanks for it, especially for that part where Dr. Werner insists on separating the teeth properly, and getting at them so that contour fillings can be thoroughly and perfectly adapted to the cavity. In my opinion, that is the cause of the failure of the majority of such fillings, in not giving time for preparation. You cannot make a proper filling in an improperly prepared place, and I freely admit that my failures come oftener from the lack of time to separate the teeth so that the proper contour fillings may be placed in the cavities than from any other cause. It seems strange that to-day anything but a contour filling in approximal cavities should be thought of or be tolerated, and conversely, I believe we are gaining in our knowledge of what should be done, and in our desire to do it, and in our skill to do it; and also I believe we are gaining in the appreciation of our work by our patients, and that is very gratifying. There is no limit to be placed upon the value of teeth to the person who owns them, and it is a fault that that we should all strive to overcome, this hurrying matters too much.

I heartily endorse the paper, so far as its advocacy of contour work is concerned. So far as selecting the material enters into the case, each operator must decide for himself upon the circumstances presented. I can do better work in some instances with amalgam combined with gold than with gold alone. I do not like to use it, but I am compelled to because it is the best thing that I have in many instances for the case at hand.

President Shepherd: If no other gentleman cares to speak on this subject, I will ask Dr. Werner if he wishes to say anything in closing.

Dr. Werner: I have not said half that I could say on this subject, but may have said so much as to have tired some here present. I spoke but little in my short paper on the preparation of cavities,—almost nothing,—but that is quite an item, and I am glad that Dr. Clapp sees the vital point. He has the truth of the matter—your contour and your preparation of cavity is the secret of success, and that can only be secured with the matrix.

Dr. Stanley: It seems to me that the preparation of the cavity is independent of the matrix.

Dr. Werner: In all of the cases that I have presented to-night I could not have excavated and filled with gold without the use of the matrix. The excavation and preparation of the cavity many times takes one a good half of the whole length of time of the operation. I have no patience with the unprofessional plastering and hurrying method that is sometimes practiced.

If I should tell you that since the first day of January until to-day—and I have operated every day in the week except Saturday afternoons and Sundays—I have used amalgam perhaps six or eight times, you would be surprised; you would hardly believe it. Another operator will use it five or six times in one sitting, and do that same thing six or eight times in his daily work. We must make allowance for different practices, to be sure, but also for an immense difference in the willingness, the skill and the ability of operators to perform certain kinds of operations. *International Dental Journal.*

ARTICLE II.

SURGERY WITHOUT PAIN.

The meeting of the Philadelphia County Medical Society was rendered particularly interesting on account of the presentation of a paper by Dr. T. Pervin on the new method of abolishing the pain of surgical operations without the necessity of employing ether or chloroform. This is the system suggested and practiced by the well-known German surgeon, Schleich, who, by its use, has been able to perform practically all of the minor and many of the major operations of surgery without the slightest pain to the patient and without depriving him in any other way of his consciousness.

By the method of Schleich there are prepared three solutions of common salt, in which are dissolved different quantities of muriate of cocaine and morphia. The part to be operated upon is thoroughly cleansed with an antiseptic solution and the surface brought to a low temperature by a spray of chloride of ethyl. Into this area of the skin, which, by the action of the spray, has been deprived of all sensation, the salt solution containing the cocaine and morphia is injected by means of a special hypodermic syringe, numerous punctures being made in all directions. This renders the deeper structures insensible to the surgeon's knife, and for a period of from twenty minutes to half an hour the patient is not conscious, so far as actual pain is concerned, of extensive cutting and sewing.

The new method differs in an important degree from the ordinary employment of hypodermic injections of cocaine. The strength of the drug which has been used in the past is about one part in each twenty-five parts of the solution, while in the Schleich method there is often employed a strength of only 1 in 10,000. In the former, however, only a few drops of the solution are employed, while in the latter the tissues surrounding the part to be operated upon are thoroughly infiltrated with the solution. With the small quantity of the cocaine employed by Dr. Schleich, it is apparent that something more than cocaine is responsible for the local anesthesia so perfectly obtained. In the opinion of Drs. Keen, Ashhurst and Morton, who discussed the merits of the new system, the infiltration of the tissues with the solution and the distension of nerves were responsible in a large measure for the absence of pain when the incision by the knife is made.

To indicate the manner of employing the method of Schleich, and to show the entire absence of pain, one of the surgeons had the solution inserted beneath the skin of the arm and an incision an inch long made and sewed up before the society last evening.

In the discussion it was generally conceded, both from the results achieved by the German surgeon and the experiments made in a number of cases in this city, that a decided advance has been made in the field of anesthetics, and that for a large number of operations the infiltration method would entirely supersede the general anesthesia by ether and chloroform.—*Philadelphia Record.*

ARTICLE III.

SOME THOUGHTS TOUCHING EXCESS OF MINERAL OR CALCAREOUS MATTER IN THE SYSTEM.

BY JOHN C. STORY, M. D., D. D. S., DALLAS, TEXAS.

Read before the Section on Oral and Dental Surgery, Nashville Academy of Medicine.

As our remarks in this paper deal almost entirely with the results of excessive deposits of mineral or calcareous matter in the system after the bony framework is complete (the most of which enter into the formation of bone), it will be well in the outset to consider for a brief space whence come these deposits, and then the results. Now, in all limestone regions (and here we find the conditions of which we are about to speak more prevalent than elsewhere, and more especially here in Texas, as this has been the field of our most extended observation, even the very air we breathe, and especially the water we drink. Add to this soda in some of its forms, which enters so largely into our various food preparations, with magnesia so often found in our drinking water, and then again add the not only useless, but harmful, salts of aluminum frequently found in our bread, and we have sufficient source for any amount of these deposits. These mineral substances, taken into the system in excess of the demand (even granting that they are ever demanded in that form), after the system or body is mature, constitute the tartar which we find deposited about the necks of the teeth, besides other stony formations to be noted further on.

Every observer is aware of the destructive influence of these deposits around the teeth—to the teeth themselves—causing more loss of these organs than all other sources combined, besides aiding and abetting other diseases with the vast amount of blood poisoning by reason of the pus generated about the necks of the teeth, from this irritant, and carried into the system through the digestive apparatus and by direct absorption.

But may we not also find in this excessive supply of earthy or mineral substances in the system the prime, yet hitherto occult, cause of some of our most fatal maladies? May we not here have the true cause attending fatal albuminuria or so-called Bright's disease? It must be admitted that every case of albuminuria is not Bright's disease, though every case of Bright's disease is albuminuria. Were it otherwise, few mothers would live to see their second baby. Happily, then, this is not the case. Albuminuria may be said to be a disease of nutrition (if disease at all), either excessive or perverted—in the pregnant woman evidently excessive, since the ruddy cheek, the increase of adipose tissue as shown in the rotundity of form, indicate the most perfect and robust health. An examination of the urine, however, at this time, will almost invariably indicate the presence of albumen. Then if albumen in the pregnant women comes from too much nutrition, may it not be the same in every other case? Now this albumen, being in excess, and not needed for use in building up the tissues, is instead taken by the various emunctories of the body and cast out with the refuse. Now may not this albumen in a system too well supplied with mineral salts, in its passage through the kidneys, the natural emunctory of the body for the mineral substances as the liver is for the vegetable, be there coagulated in the tubules, and form the little casts as we see them under the microscope, and are the pathognomonic signs of Bright's disease? And these coagula in turn furnish a nucleus for the deposit of the various earthy matters, forming little rough stones, it may be ever so minute, which by their presence set up ulcerative inflammation and develop true Bright's disease, destroying the structure of the kidney, and ultimately the life of the patient. It may be also that such a condition at the same time prevails in the great laboratory of the system, wherein are manufactured red blood corpuscles, since their constant diminution in the circulation is manifest from the increasing pallor or leaden hue as the disease progresses; and the almost uniformly sudden death of the patient, for, notwithstanding death is the inevitable result, it comes on almost always sooner than expected. The system having consumed the entire red blood supply, life goes out as does a lamp when the wick is exhausted. A reasonable foundation for these views is found in the fact that we have seen no case of Bright's disease in which there was not a large deposit of tartar about the teeth; and whoever saw a case in an individual brought up in the piny woods, and who had been raised on pure freestone water and a plain, frugal diet? In further confirmation, we note the rarity of this disease among children, and only in those of precocious development, and where the supply of calcareous matter had been largely in excess of the demand.

That we are led further to these conclusions comes from the fact that the remedies usually most efficacious in this fearfully fatal malady are found to be water absolutely pure or in which there is an excess of some acid, with an entire absence of the salts of lime, soda, etc., with a diet also free from these salts.

It might be given as a reason why the pregnant woman enjoys perfect immunity from this disease, notwithstanding her system is surcharged with albumen at this time, is the urgent demand for bone-making material for the upbuilding of the fœtus which she is growing in utero. And is it not a fact that calcareous deposits about the teeth are much lessened, if not entirely suspended, during this period ?

The one great difficulty in the way of successful treatment of this disease lies in its insidiousness. Having its origin in too much health, it steals on the patient so gradually that he is often beyond the reach of hope or remedy before he becomes fully aware of his condition.

We wish to add, further, that these ideas, hypothetical as they are, have neither been bought, borrowed, nor stolen, since we have read nothing concerning this disease in thirty years, save, perhaps, the statements of the wonderful cures wrought by the various mineral waters in the advertisements of the wells and springs which produce them. But they are the results growing out of a study of the effects of these calcareous deposits in the diseases brought under our immediate observation by reason of the specialty of dentistry to which we have directed our attention for many years. Following the line of thought indicated by the known diseases produced by this evident surplus of calcareous matter, we have gone beyond the limit of our specialty and entered the field of general pathology with our speculations and arrived at the conclusions touching Bright's disease as given above. Going on then to amplify a little, if these conclusions are correct in regard to the etiology of this disease, have we not a key that will entirely shut the door to its ingress and, with many others, blot its name from the lists of incurables in our nosology?

To do this we have a task before us; but as physicians, philanthropists and true scientists, it is our duty to meet the condition with convincing arguments; arguments that will change entirely our dietetic system to the extent that calcareous matter in dangerous quantity will not be permitted to enter the system after the body is mature.

It is a well ascertained fact that all the mineral salts necessary to maintain in harmony the process of digestion and the various physiological functions of the human organism, are to be found in the vital foods and in the proper form to be appropriated in the process of nutrition. In other words, live on a more purely fruit and vegetable diet, eschew salt meats, soda biscuit, alum-made baker's bread, and especially lime water, or such as is found in the wells and springs contiguous to this city, and we might add all limestone regions, which often contain, in addition to lime, more or less magnesia.

We are well aware that this will antagonize existing customs, run counter to old established habit and prejudices, and meet with opposition from tradesmen and manufacturers; but if from observation and long experience we are satisfied of the danger to health and life that lurks in our present manner of living, and that immunity from pain, suffering and disease, with an existence made enjoyable, and life prolonged far beyond the usual time, and coming to an end as quietly and peacefully as a babe to its slumbers, will be brought about by this change, then it surely is our duty, and the demand is upon us to make the effort. Standing, as we do, in the great light which modern science has thrown on the causes of disease to the extent of completely revolutionizing our treatment, and lifting medicine from empiricism to the dignity of a true science, may we not as scientists continue our research till we are enabled to entirely prevent many of the incurables which now confront us? It is still a sad commentary on scientific medicine to acknowledge any disease as incurable, or without the pale of prevention. We acknowledge our skepticism regarding hereditary transmission of disease, believe in contagion as the more universal method of communication, and also that all diseases may be either cured or prevented.

Then, to repeat to some extent, besides Bright's disease, whose cause and fatality we believe may be found in calcareous deposits, we do know that we find these in the bladder as stone, and there are few physicians long in the practice but have witnessed the excruciating pain in the passage of a gallstone or renal calculus. A specimen of gallstone was presented to me a few years since, taken from a gall bladder which was full to complete impaction, its size larger than a goose egg. A physician informed me not long since that he counted more than three hundred of these stones in one evacuation from the bowels, and these he was told had been passing in like numbers in each evacuation for a week or more. Again, we see the arteries filling up with these deposits till they become rigid, brittle tubes. All these go to make up a list of dangerous and usually incurable diseases.

That this baneful influence may extend beyond the bounds of our present observation is within the limit of probability, but to what extent may never be demonstrated.

Now, if we are in fact just what we eat and drink, and we cannot be anything else, and many of our most serious maladies are the results of improper diet, can we not so regulate our food supply that each organ and system of of organs will be supplied with nutrition just sufficient for the repair without any excess, and thus the functional harmony of each be maintained and carried on without trenching on the prerogative of another, and the whole of man's life, unmarred by pain or ache, be one of continued enjoyment till the measure of his days is full, when he passes into the realms of the great beyond, where disease has ever been a stranger and where pleasures flow continued as an everlasting river.—*Dental Headlight.*

ARTICLE IV.

LONGEVITY.

BY F. H. METCALF, D. D. S., SACRAMENTO.

Read before the California State Dental Association, July, 1895.

A man being asked in prayer meeting if he wanted to go to heaven, replied "No." "Do you want to go to hell?" asked the parson. "No." "Well, where do you want to go?" "Don't want to go anywhere; prefer to say right here in California." That man had a level head. It is safe to say that no person in possession of his faculties and in good bodily health wants to die. This is a beautiful world and we are put here to enjoy it in a legitimate way.

Two years ago I wrote a paper on "Ambidextrousness," believing it, among other things, conducive to longevity. Last year, on "Duty and Progress," finances and general care of the health. This paper is to be a continuation of the laws of diet, and shall refer more particularly to that much-abused organ, the stomach. Our moral and physical being depends so much upon it that it is deserving of our most careful consideration. An analysis of what goes into some stomachs in twenty-four hours would be startling, to say the least. If the stomach could talk, what a tale of woe it would impart. How often would it look up and say, "What's coming next?" Nothing is so conducive to long life, mental and bodily vigor as good digestion. The Bible says (Psalms, XC, 10th verse,) that the age of man is three score and ten years; still there are a few who reach it; though there are records of men vigorous at the age of 100. Again, in Ecclesiastes, it says "the grinders cease because they are few." But that was before the advent of dentistry and artificial teeth. Statistics show that the average length of life is on the increase. Is it not due in a measure to dentistry and the education of the masses regarding the laws of health? That few reach the allotted age is not due to heredity entirely, for with ordinary conditions of birth we have two grandfathers, four great-grandfathers, eight great-great-grandfathers, sixteen great-great-great-grandfathers; all responsible in a measure for our existence, and one could hardly throw a brick without its falling on the grave of an ancestor with a weak lung, stomach or kidney. Nature is bountiful, and has given most of us a good start, and, did we but take half care of ourselves, we should reach the age of 100 and still be in possession of much bodily and mental vigor. It is the pace that kills; not hard work. Gladstone and Bismarck furnish examples of long and active public life. I wish to give a few instances of exceptional longevity.

Henry Francisco, born in France, died in Whitehall, New York, in October, 1824, at the age of 135 years. John Gilley, born in Ireland in 2690, died at Augusta, Maine, in 1813, aged 123. Dr. Mussey, professor of anatomy at Dartmouth College, saw Gilley at the age of 118, and he was still active. He lived a bachelor until his 70th year, when he married, and became the father of eight children. Peter Zarten, near Temesvar, Hungary, died January 5, 1724, aged 185. Henry Jenkins of Yorkshire, England, lived to be 169 years of age. John Rovin and wife, of Temesvar, Hungary, died in 1741. He was 172 years at his death; his wife 164; their married life extended over a period of 147 years. J. Worchester, LL. D., gives a list of 98 persons in New Hampshire, all of whom were

100 or more years old. There were in 1858 in the United States 2,555 persons over 100 years old.

This proves that long life is possible and attainable. Rather an interesting experiment, to say the least. That longevity is more prevalent in New England than in other portions of the Union is not strange when we consider their mode of living, which is very plain. They are more methodical in their habits, and lead quiet, uneventful lives, they stick religiously to spring medicines, as the following anecdote shows:

"When snow and ice have gone," said the Sunday-school teacher, beaming on the boys, "and nature awakens from her long sleep, the tiny buds begin to appear, what do we have then? You may answer, Robert." "Sulphur and molasses" replied Robert earnestly. Whether there is any virtue in sulphur and molasses, aside from the druggist who deals in the mixture, I am not prepared to say.

People who live long, and retain their mental and bodily vigor, keep good hours and lead active lives. People rust out quicker than they wear out. Nutrition of the body can only come through activity of the body. Food, no matter how nutritious, is not easily drawn into the system, or assimilated, unless muscular activity is going on. Our lives, our dispositions and our mental capacity are regulated by what we eat, and there are few cases of ill-health that proper diet will not alleviate, but the trouble lies in the fact that it is cheap; the demand is for a cure that costs money. What a true saying: "Free prescriptions don't cure." How few people ever think or know of what elements the body is composed; and what food is required to maintain these according to climate, season, age, environment, etc.

The fourteen elements of the body are as follows: Oxygen, carbon, hydrogen, nitrogen, calcium, phosphorous, sulphur, sodium, chlorine and florine, iron, potassium, magnesium, silicum.

There are seventeen combinations of the fourteen elements of food: Water, gelatine, fat, phosphate of lime, albumen, carbonate of lime, fibran, floride of calcium, phosphate of soda, phosphate of potash, phosphate of magnesia, chloride of sodium, sulphate of soda, carbonate of soda, sulphate of potash, peroxide of iron, silica.

The processes of life in the body have the following divisions: First, the governing portion, the brain; second, the executive portion, the muscular system; third, the fuel, which, in a chemical sense, keeps up the supply of heat, which is the source of all activity and motion. Food must supply these three great divisions of the process of life in the proper proportion, or something will soon go wrong, though nature allows a wide margin.

Of the fourteen elements needed in the body, and which must be supplied in the food taken to satisfy the three great demands, vitality, strength and heat, I shall classify under the general terms, as follows (the words being used in their proper, and not chemical sense): The phosphates, in which phosphorus predominates, supply vitality or brain nerves and bone; nitrates, in which nitrogen predominates, supply the muscles with strength; carbonates, in which carbon predominates, supplying heat and making fat.

It is a lamentable fact that people in general know nothing of the nature of the food they eat, yet often wondering why they don't feel well. It is physically impossible to live for any length of time on food containing only a portion of the elements above mentioned, and keep well. "What we eat makes us what we are." It is our duty to learn in what proportion the elements of life are contained in the articles of daily food. This we should do for self-protection. As in most private houses, and particularly hotels, the *menu* does not vary with the seasons. Carbonates are as liable to predominate in hot weather as cold. The health of the guest is never taken into consideration. Wheat is one of the few cereals that contain the fourteen elements in nearly the right proportion. Bread is not the staff of life, unless made of wheat unbolted. In white flour we have little left but what is heat-producing; it impoverishes the blood, followed by fevers and headaches. How few mothers know to what extent the phosphates are demanded for growing children; and let me mention here that it is quite as important that children should have some food that requires an effort to masticate.

Most children's teeth suffer for want of exercise. Cracked wheat with good milk, lean meats not too tender; this, coupled with cleanliness, would do much to remedy existing evils. People living in San Francisco need more carbonaceous food than we do in Sacramento, where it is occasionally warm during the summer. Thousands of people ruin their stomachs from sheer ignorance of the laws of diet. "An ounce of prevention," etc. No profession offers better opportunities for spreading the truth than dentistry. Space will not admit my giving a complete list of foods, but I will mention a few that are particularly rich in the elements that produce heat, mental and physical activity. The best brain foods or phosphates are lean meats, fish, cheese, crabs, wheat, barley, oat meal, almond nuts, Southern corn, beans, peas, potatoes, figs and prunes. The best of carbonates, or heat-producers are fat meat, sugar, butter, rice, rye, chocolate, dates, buckwheat, Northern corn, white flour; excess in this branch is the cause of poor health, poor blood and bad skin. The best of the nitrogenous foods, or muscle-makers, are vermicelli, eggs, cheese, meats (particularly beef), Southern corn, salmon, beans and peas. Phosphate foods, for persons of strong mentality, and those who study much, cannot be too strongly urged. The best food is the cheapest.

Shakespeare says: "Dainty bits make rich the ribs, but bankrupt quite the wits." "Fat paunches make lean pates." How can a boy be expected to study who eats a breakfast in warm weather consisting, perhaps, of coffee, ham and eggs, white bread and buckwheat cakes. He complains of a tired feeling and is dosed for malaria, when all he needs is a change of diet and perhaps some wood to saw. Coffee and tea are responsible for many nervous disorders. Many persons injure their stomachs by taking their food in too concentrated a form; they need more food for waste, fruit and vegetable to distend the stomach, so that it may secrete the juices. Certain foods are receptive to certain parts of the body. The muscles of beef contain the same elements as human muscles, and are therefore adapted to nourish these. Meats of all kinds are more strengthening, taken from the part of the body having the most exercise. For instance, a rounk steak has superior nourishing qualities to a tenderloin. Crab and lobster contain a great quantity of brain and muscle food, but are so concentrated that they should not be eaten within several hours of retiring. People who believe in visions, dreams and other psychic phenomena, could account for it largely if they were reminded of what they ate before retiring. Swedenborg, the mystic, had his first vision after overloading his stomach. A piece of mince pie is harmless to look at, but is a terror taken before retiring. Crab salad, before retiring, will give most people a lively time in dreamland; but if one wants to enjoy Dante's Inferno take a Welsh rarebit at bedtime. Hearty food should never be taken at night, it causes restlessness and twitching of the muscles. Oysters are easily borne by the most delicate stomachs. They are composed of 12.6 nitrates, 2 of phosphates, balance waste. The abdominal portion is largely plain mud, and should not be eaten, as it is not pleasant to think of one's stomach being a receptacle for mud, and no doubt causes it to look like portions of the bay when the tide is out. To sum the matter up: on cold days eat heaters and muscle-makers; hot days, eat vitalizers and wastes, fruits; tired days, muscle-makers and phosphates; headache days, vitalizers; tea, coffee and condiments should be used sparingly. Think every day of what you eat; note how it agrees with you; study a table of foods and act accordingly; by practice one readily learns what will be conducive to health in his individual case. One need not deny himself anything wholesome, but study time, conditions and moderation.

Cheerfulness is producive of longevity, and should be cultivated. The seeds of cheerfulness are ambition, employment and an immediate purpose in life. Economy and thrift, simplicity in living and to be free from debt are wonderful aids to contentment, cheerfulness and long life. If a man earns $1 and spends 99 cents, result, happiness; if he spends $1.01 and earns 11, result, misery; difference between happiness and misery; 2 cents. Great riches, particularly if ill gotten, shorten life. An old man on his death-bed called his sons to his side and giving each a small bag of money, said: "Boys, the fortune that I leave you is small, but there is not a dirty shilling in the lot."

Oliver Wendell Holmes had about the right idea when he said. humorously:

> I care not much for gold or land;
>   Give me a mortgage here and there,
> Some good bank stock, some note of hand,
>   Or trifling railway share.
> I only ask that fortune send
>   A little more than I can spend.

Sadi said, speaking of riches, "Enough will carry you; more you must carry yourself."

We must have recreation also to reach the century mark. "All work and no play makes Jack a dull boy; and, if the work happens to be in a dental office, it might make him a weak man. Recreation gives moral and physical health, daring and endurance. The Duke of Wellington truly said: "The battle of Waterloo was won in the play-fields of Eton." We should drop our office cares, go to the country, fish, hunt and shoot, lose ourselves for the time being, inhale the wild-flower air, which is invigorating to the mind as well as the body; inhale lots of air; practice abdominal breathing, whether walking, horseback riding or bicycling.' One writer says: "The best thing for a man's inside is the outside of a horse;" and we may add, bicycle.

Presuming that from now on we lead such a life as shall bring us to a vigorous old age, what shall we see fifty years hence? What changes will have been wrought in persons, times and things? Let us hope that a common-school education, at least, will be compulsory with the masses. Let us hope that people will cease to speak to dentists of their trade, and want to know what D. D. S. means. We shall hope to see chairs of commonsense established in the schools and colleges of the land, filled by wise men who shall judge from contact and observation what calling or profession is best suited to young men entrusted to their care. Manual training we hope to see a prominent feature in the grammar and high school. The distinction between scholarship and usefulness will be better defined, and much that must be unlearned will give place to what may be applied. Money will not be considered the standard of excellence; children will not be pampered until their stomachs are ruined and their amusements exhausted, and an occupation purchased to keep them respectable. Enjoyments will be measured by capacity, body and mind will be one and inseparable, ingeniousness will be a social excellence.

We shall hope to see cooking and the proper selection of foods reduced to a science. All hotels should be compelled to employ, we will say, one professional educated cook, whose duty it shall be to see that no adulterated food goes into the kitchen, that foods are properly cooked and regulated according to season, climate, temperance, etc. The proper selection of food shall be taught in the school; education on that subject will be universal. Lectures will be given at short intervals on the care of the teeth and the general health in the different grades. Between the ages of ten and twenty the sexes will be separated in the schools, with teachers of their own sex. At the proper ages they will be instructed fully on the dangerous temptations and pitfalls incident to young manhood and womanhood. The cultivation of the graces will be a prominent feature. As a result we will see manly boys and womanly girls the rule.

Morals, it will be found, are largely emanations of the stomach, and men and women are good or bad as they are fed. Benefactions are generally traced to good dinners; crimes to bad ones. All classes will be gastronomically wise. People who live plain have fewer wants, therefore more leisure for social intercourse and cultivation of the mind. A limited amount of manual labor will be the rule for all, which shall increase our physical comfort and aid in our moral and intellectual development. Frankness in the office will be cultivated and practiced to the fullest extent. Dentists will never speak ill of one another, but all will strive for the greatest good to the greatest number.

That dress cuts some figure in the length of our lives I doubt not, but owing to the recent advent of the bloomer and the new woman, I have not the courage to prophecy or suggest reforms; but will venture the assertion that the longevity of women will not be diminished by the bloomer, and with her Trilby feet she will be enabled to wear her husband's fine boots with perfect ease; but let us offer a silent prayer that we men be still permitted to wear trousers.—*Pacific Stomatological Gazette.*

ARTICLE V.

THE ORIGIN OF SALIVARY CALCULUS.

BY HENRY M. BURCHARD, D. D. S., M. D., PHILADELPHIA, PA.

(Continued from last number.)

A reaction which may have application here is the following: If to a solution of lactic acid milk of lime is added, a portion of the calcum is converted into calcium lactate; another portion is precipitated as calcium phosphate.

The proportion of lime-salts entangled appears to be small in this experiment. Upon filtering the solution, a coagulum (white) is left upon the filter-paper, which in drying assumes a dark color, a mixture of green and brown, about the color of some of the hard varieties of calculus.

To the filtrate add a solution of oxalic acid; a white precipitate separates and falls,—calcium oxalate.

As this is the reaction for calcium lactate, it is probable that there has been formed calcium lactate, soluble and left in solution, and calcium lacto-phosphate entangled in the coagulum.

It was experiment No. 1 which first drew the writer's attention to this matter as a possible solution to this undetermined question,—the *modus operandi* of calculus formation.

The conditions existing in the general cavity of the mouth (that is, the part containing the greater part of the saliva) are the reverse of the test-tube experiment. The fluid containing mucin and lime-salts was poured into a dilute solution of lactic acid. In a test-tube about two inches of a one per cent. solution of lactic acid were placed; there was then poured on it about one inch of saliva; immediately upon the contact of the fluids a coagulum formed,—formed so quickly that there was no apparent diffusion of the saliva into the lactic acid solution.

The more dilute the solutions of acid are used, the thinner are the coagula. With a one-half of one per cent. solution the coagulum is a viscid but well-defined mass floating in the general fluid. The coagulum forms so quickly that any particles suspended in the saliva are inevitably entangled in the meshes of the coagulum. In this event the calcium phosphate is probably combined with the lactic acid, forming a lacto-phosphate.

In the light of these investigations the writer recalls with pleasure a conversation between Dr. E. C. Kirk and himself over a year ago. In discussing the question of uratic deposits upon the roots of teeth, while one of these bodies was stewing in nitric acid, preparatory to making a "murexid" text, Dr. Kirk said, "I believe all these calculary deposits will be found to belong to one great order. That salivary calculi will be found to be one group of several chemical bodies which are formed by the precipitation of lime-salts in colloid media, and this is the common factor in the formation of calculi in general. That about a nidus these substances will be deposited or formed in some definite manner; that they are more than mere agglomerations of lime-salts with extraneous matters; that they resemble calcoglobulin more than they do mere cemented precipitates, and I believe all calculi will have a family similarity in general structure, no matter in what part of the body they are formed "

It is purposed later to make sections of such teeth and calculi, prepared after the Weil method and try to view them by transmitted light, if possible. This was suggested to me by Dr. Kird during the conversation quoted. There is a field here for the specialist in histology.

Certain conditions are present, at least in part, which under other circumstances give origin to calcoglobulin; a lime-salt deposited in a colloid medium. I am not yet prepared to state that this is the result here; but the two factors mentioned are present.

"If a soluble salt of lime is mixed with a precipitant solution, the precipitate will be an amorphous powder

"When the lime-salts are precipitated in gelatin, an albuminous, or other colloid medium, the character of the salt is materially altered. Instead of a powder there were found various curious but definite forms, quite unlike the character of crystals or powder formed without the intervention of the organic substance.

"If carbonate of lime be slowly formed in a thick solution of albumin, the resultant salt has changed its character. It is now in the form of globules laminated like tiny onions. These globules, when in contact, become agglomerated into a single laminated mass. The globular mass, at one time of mulberry-like form, loses the individuality of the constituent smaller globules and becomes smoothed down into a single mass or layer." (Rainey.)

"Mr. Rainey suggests as an explanation of the laminated structure that the smaller masses have accumulated in concentric layers which have subsequently coalesced.

"Professor Harting later found that other salts of lime would behave in a similar manner, and, by modifying the condition of the experiment, various forms might be produced.

"In the calcospherite, Mr. Rainey was aware that albumin actually entered into the composition of the globules, since it retained its form even after the application of an acid.

"Professor Harting has shown that the albumin left behind after treatment of a calcospherite with acid is no longer ordinary albumin; it is profoundly modified, and exceedingly resistant to the action of acids, alkalies, and boiling water. He proposes for the modified albumin the name of calcoglobulin, as the lime appears to be held in chemical combination, for the last traces of lime are retained very obstinately when calcoglobulin is submitted to the action of acids." (R. R. Andrews, after Rainey and Harting.)

The centers of lactic fermentation in the mouth are scattered in every mass of food-debris; the process is inactive, so the saliva is becoming charged with lactic acid at many places, hence the coagula would be scattered generally through the saliva.

The experiment noted has been repeated several times; the results are always the same. Chemically, the conditions or factors are analogous to those existing in the human mouth, addition of saliva being made to a solution of lactic acid. It is fair, therefore, to assume that in the mouth, when the saliva comes in contact with solutions of lactic acid, these coagula will form.

In the box-like sublingual cavity it is seen that its highest point is at the linguo cervical aspects of the inferior incisors, hence as the coagula are lighter than the liquid in which they are suspended, they would agglomerate at that situation, and by the movement of the tip of the tongue be pressed between the teeth, filling the cervical spaces, and into the depression or fold of the gingivæ.

In the folds, the recession or depression marking the junction of the gingivæ with the teeth, accumulations of debris are found. Through the mechanical cleansing by the tongue most of the material has been removed, but there remains a line of deposit which forms a food-supply to micro-organisms, and producing, it may be, substances which act as local irritants. It will be remembered that, as stated, in this fold of gum there open the mouths of numerous glands secreting mucin. In addition to the normal secretion at these points, the local irritation, due to the presence of foreign and irritating bodies and substances, will produce an increased and, it may be, an altered secretion in the glands.

There is another prolific source for such disturbance, —an acquired predisposition to gingivitis, or, it may be, stomatitis. From their structure the gums are adapted for rough usage; are fitted (and, no doubt, in all animals designed) to receive without injury a marked degree of pressure or buffeting during mastication. In addition to the cooking of food, rendering it a more fitting soil for the breeding of micro-organisms, rendering it more decomposable, the softening of food-stuffs by the cooking process literally robs the gum-tissue and the supporting structures of the teeth of proper exercise. This lessening of functional activits (disuse) is a source of debility, so that an oral condition is engendered furnishing a lessened resistance to disease-producing agencies. The secretion containing mucin is exuding into a collection of fermenting material; mucin is coming in contact with lactic acid, and bathed in a fluid containing salts of calcium.

The pressure of the elastic gum upon the collection flattens the coagulum, and through the movements of the tongue or any muscular parts, the portion of the coagulum above the gum-margin is brushed away. The swollen gum-tissue forms a pocket, in which a coagulum of mucin containing lime-salts is protected from mechanical dislodgment, and thus, like any similar deposit, hardens with age. As is duly noted, the calculi ultimately cause the detachment of the gum from the tooth, and exhibit the congestive gum-margins characteristic of this condition. By the pressure to which the coagulum is subjected it is condensed, has much of its fluid pressed out. Artificial coagula are seen to acquire a dark tinge during a progressive drying, and resemble in appearance those subgingival deposits.

As will be inferred from this presentation, the writer is disposed to attribute a different origin (at least different in part) to the subgingival deposits, from that of the epigingival, those at the cervices of the inferior incisors and upper molars.

The question of the condensation, the agglomeration of the coagula at the cervices of the inferior incisors, appears to be due to the specific gravity of the coagula being less than that of the saliva. This being the highest point of a cavity, they accumulate there. No doubt after the formation of the coagula, these latter offer, by their physical character, a nidus for the deposition of calcium salts, and successive additions of coagula. Situated as they are opposite the openings of the salivary ducts, they have entangled in their substance the precipitated calcium phosphate.

Another probable direct course of additions to the concretions is that, as stated in the analysis of the saliva, it contains an amount of free carbon dioxid, enough to hold calcium salts in solution, both the phosphate and the small amount of carbonate present; upon exposure to the air the carbon dioxid escapes, and the calcium salt precipitates.

Successive coagula and lime deposits occur, massed between the teeth by the action of the tongue.

The next situation, the buccal faces of the superior molars. These are usually the softest of all deposits; this condition due no doubt to the absence of mucin in the secretion of the parotid gland. Mucin, however, is contained in the buccal pockets, even if only that secreted by the gingival and buccal glands. The calcium salts are precipitated, owing to the escape of carbonic acid, and are entangled in the coagula. As a rule these deposits are mechanically displaced by the action of the buccal muscles and food masses during mastication; they are always subjected to a free washing by the watery parotid secretion. If the masticatory function be lost or disused upon one side, there is an absence of the mechanical cleansing, and deposits of calculi occur more frequently. It has always been noted that these deposits were protective against caries to the surfaces covered by them. It is evident, therefore, that lactic acid cannot be present upon their under-surfaces; no doubt it has combined with the phosphate, forming a lacto-phosphate of calcium.

The most favorable conditions for the formation of calculi appear to be a cavity or space, in which the fluids of the mouth may rest as in a pool, and to have some rough projection to engage and retain precipitated matters; and, again, the presence of some foreign body which may act as a nidus to the agglomerating mass.

Accepting the truth of this hypothesis of the origin of calculi, it is evident that their prevention is essentially the prevention of the formation of lactic acid. It will be seen also that the same therapeusis is the prevention of dental caries.

The active cause of the production of these organisms is always present (the micro-organisms), and it is accepted that the condition of the mucous membrane and its glands determines in a great measure the amount and activity of these bodies. As the first means of prevention, the hygienic condition of the gums must form the first element. It is probable, as stated, that the debility of the soft tissues of the arches is due in great part to insufficient usage.

The second factor, the removal of fermentable material, as the process of cooking food, leaves an increased amount and adhesiveness of debris; mechanical dislodgment and removal are necessary. These means lessen the food-supply, the soil for the micro organisms; but as it is impracticable to remove it in toto, the next solution of the problem is the destruction of the organisms themselves,—this by means of antiseptics.

If the hypothesis presented is accepted, a fresh significance is given the use of antiseptic mouth-washes.

Among animals which are fed upon pasty food, particularly about the teeth of lap-dogs, pet terriers, etc., it is not unusual to find extensive deposits of calculi. These are always associated with more or less stomatitis, in part unquestionably due to the irritation produced by the calculi, and in some cases an oral catarrh has clearly preceded the deposits. I remember one case, a Blenheim terrier, subjected to the most miserable form of coddling, ill-feeding, and lack of exercise, whose teeth were covered by incrustation of hard, green deposits, and in addition there was a well-marked pyorrhea. I extracted several of the teeth for this animal, An old *Felis concolor* (puma), at the Philadelphia Zoological Garden, had a similar affection. Dark deposits could be seen along the necks of the teeth, the gums turged and showing a blue line over the deposits; several teeth were loosening.

The hypothesis as at present formulated is that salivary calculi are due to the action of lactic acid upon the secretions of the salivary glands and the glands of the oral mucous membrane. That by the union of these two substances a coagulum of mucin is formed, in which are deposited and entangled precipitated lime-salts, mainly lacto-phosphate. That the deposits are similar to calculi in other parts; but whether the union of the colloid with the lime-salts is more definite than a mixture is undetermined.

This paper is simply a statement of the results of experiments to date; it is purposed to do further work in this field, and these views as present expressed may be modified, but I believe the central idea will remain intact. It is presented as it is at this time at the request of the editor of the *Dental Cosmos*, and thus represents work in process of transition, not completeness.—*Dental Cosmos.*

ARTICLE VI.

ANÆSTHESIA AS PRODUCED BY SCHLEICH, OF BERLIN.

BY GEORGE TULLY VAUGHAN, M. D., PHILADELPHIA, PA.
(Passed Assistant Surgeon U. S. Marine Hospital Service.)

Schleich's method of producing local anæsthesia has been somewhat discussed in the medical journals and societies of this country, and with considerable difference of opinion as to its efficiency, mainly, I believe, owing to failure to follow strictly the details as given by the author. In January, 1895, I visited Dr. Schleich in Berlin and saw him operate, using his method of producing local anæsthesia. The solution is:

R.—Cocaini muriatis, - -	1.00
Morphiæ muriatis, -	.25
Sodii muriatis, - -	2.00
Aquæ Distillat - -	1000.00—M.

The maximum dose, as a rule, is 50 c. c. of this solution, containing .05 grain (¾ grains) of cocaine, which is injected into the tissues to be operated on by means of a hypodermic syringe as follows:

If desired, the slight pain caused by the first insertion of the needle may be prevented by chilling with ether spray. This is not usually necessary. The needle is then inserted *into*—not beneath—the skin and a drop or two of fluid forced out, forming a white wheal in the skin which is instantly deprived of sensation as far as the wheal extends, and a little beyond its borders. The needle is then pushed on from the borders of the first wheal a short distance and a drop or two more injected and so on successively along the line of the intended incision—first in the skin itself, then in the tissues beneath, layer by layer, including periosteum if necessary, until the entire field of cperation is distended with the solution.

Dr. Schleich uses this solution in all minor operations, as opening of abscesses, whitlows, etc.; also in some laparotomies, if there are not too many adhesions, which would requird too large a quantity of the solution for thorough saturation of the tissues. He had used it in cholecystotomy, ventral fixation of the uterus, and in one case of amputation of the forearm. In the last operation there was some pain, but it was slight.

I have used this method in four cases with satisfactory results. In two of them the anæsthesia was not complete; but this, I think, was due to want of sufficient quantity of the solution.

The first case was excision on August 14, 1895, of a fibroma, about the size of a pigeon's egg, from the upper lip of a man. Less than 5 c. c. gave complete anæsthesia.

The second case was circumcision, August 22d, 3 c. c. being used which failed to produce complete insensibility, though the pain was much diminished.

The third case was operated on December 4th, excision of suppurating inguinal glands, and 8 c. c. of the solution were used. The tissues were thickened and inflamed so that the glands lay one to one and a half centimetres from the surface. Incisions with the knife caused no pain, but the tearing of the tissues with the fingers in dissecting out the glands caused a little.

In the fourth the solution was used to prevent pain in aspirating the pericardium; 1.75 c. c. of the solution being injected into the skin and underlying tissues down nearly to the pericardium over the sixth intercostal space. Absolutely no pain was felt on introducing the aspirating needle until the pericardium was punctured.

It is evident that this method of producing local anæsthesia, being so safe and so simple, has a wide field of usefulness, not only in minor, but in certain cases of major operations.

Parke, Davis & Co. now manufacture a tablet, so that this solution can be prepared in a few moments, simply by dissolving a tablet in the proper quantity of water.

Dr. Schleich has also been experimenting with general anæsthetics, especially with three mixtures in different proportions, of benzine, chloroform, and ether, as shown below.

R.—Ætheris petroli (benzine),	5	5	5
Chloroform, -	15	15	30
Ætheris sulphurici,	60	50	80
Boil respectively at (centigrade),	30°	40°	42° C.

The mixture boiling at the lowest temperature (39°) gives the lightest narcosis, and the one boiling at the highest, the deepest.

The advantages claimed are quickness of action sooner recovery from unconsciousness, and that little is left in the system for elimination by lungs and kidneys.

The one patient to whom I saw the lighter mixture given acted as I have often seen those who had taken chloroform. There was no stage of excitement and the patient vomited a little on waking.

Dr. Schleich uses a mixture of marble dust, lysol and wax for cleansing the hands and making them aseptic. Culture medio inoculated with scrapings from beneath the finger nails after cleansing with this mixture, remain sterile. As an ointment and protective to wounds, he uses a powder of oxide of zinc and sterilized blood serum, dried and pulverized, wetting the powder and making a paste before applying. It dries and makes a protective dressing somewhat like collodion—*Virginia Medical Monthly.*

ARTICLE VII.

AN APPARATUS FOR CHLOROFORM-OXYGEN ANÆSTHESIA.

BY LLEWELLYS ELIOT, M. D., WASHINGTON, D. C.

It is not my intention to consider the relative merits of the various agents employed to produce anæsthesia for surgical purposes, nor to enter upon a discussion of the reasons for combining oxygen with the agent selected. These reasons will be sufficiently apparent to those who have employed chloroform or ether to any extent. My object in presenting the subject is simply to refer to the different kinds of apparatus that have been used.

According to the observations of those who have employed the combination of either chloroform-oxygen or ether-oxygen, the length of time necessary to induce anæsthesia varies from three to fifteen minutes, there is an absence of vomiting or nausea or headache which so often attend the usual anæsthesia,

The first article upon this combination which I saw was by Dr. Carter S. Cole in the "Medical Record," October 12, 1895. He describes his apparatus, which was the Wailon oxygen apparatus, with a few additions. The cone is a simple tin box shaped like a coffee can. In the middle of the top, a tin tube three inches long is obliquely inserted, half remaining outside. Two rubber tubes leave the bottle four-fifths full of ether, one of which fits on the tube in the top of the cone the other in the oxygen tank. The bottle used has been the "wash" bottle ordinarily employed in giving oxygen gas. An additional opening in the top of the cone, which is stoppered by a cork, provides for the addition of ether without removing the cone from the face. A perforated platform, held in place by a removable wire frame, keeps the gauze and cotton away from the patient's mouth, and a rubber mouth piece that fits the cone and the patient's face completes the apparatus. The method first tried was to pass the oxygen through the regular wash bottle, then through the ether itself in another bottle, and thence through a tube to the cone, into which the gauze and cotton moistened with ether had been placed. Later the wash bottle was omitted, and the tube run from the oxygen tank to the bottle of ether, and the other tube direct to the cone, the gauze and cotton still being kept in the cone. Next the gauze and cotton were left out of the cone and the oxygenized ether passed into the cone. Dr. Cole states further that the amount of gas used probably averaged a gallon a minute. In the same article Dr. Francis H. Markoe describes his method of administering ether with oxygen, but the apparatus does not differ from Coles' except that he retains the two bottles.

Dr. J. H. McClelland describes ("N. A. Jour. Homœopathy, August, 1895), a method of administering chloroform with oxygen. It consists simply of forcing oxygen gently through a small body of chloroform. The apparatus consists of an ordinary chloroform inhaler, such as Krohne & Geseman's, of London, preferred, or a Junker. Instead, however, of forcing air through the chloroform bottle with a bulb, as ordinarily done, a tube is substituted, which is connected with a cylinder of oxygen. This is turned on fast or slow to suit the necessities of the case. The average amount of chloroform used is four drams an hour. The average time required to bring the patient under the influence is four and one-half minutes in a record of 100 cases. Albuminuria is no bar to its use.

Dr. H. L. Northrop, ("Hahnemannian Monthly," November, 1895), describes an apparatus which he has designed.

A nicely polished wooden box, 18 inches long, 7 inches wide, 7 inches deep, contains a steel cylinder holding 40 gallons of pure oxygen, a graduated two-ounce bottle, the requisite length of rubber tubing, and the inhaler. The latter has an inflatable face-shield attached to a metallic hood, with which is also connected a rubber respiratory bag. This, with the small wheel to be attached to the cylinder, the perforated rubber cork and nickel-plated brass tubes, is all the apparatus necessary for the proper administration of chloroform and oxygen. The apparatus weigh 19¾ pounds.

In order to use the apparatus put two ounces of pure chloroform into the bottle, attach the tubes to .the cylinder and perforated cork, and place the bottle in the corner near the open end of the box, passing the tube leading to the inhaler through this opening. Put out the cylinder until it touches the bottle, and fix it in a position by tightening the screw in the top of the iron ring supporting the cylinder. Put the wheel on the cylinder valve, close and fasten the lid of the box, and the apparatus is ready.

The apparatus which I think the most satisfactory is one made by S. S. White Dental Company, which is a conversion of their ordinary oxygen apparatus to the purposes of the chloroform-oxygen or the ether-oxygen combination. It consists of a cylinder holding forty gallons of oxygen, a rubber tubing about six inches leading from the cylinder to the air bag, which holds one gallon, rubber tubing about ten inches leading from the air bag to the chloroform bottle, a rubber tubing of suitable length leading from the chloroform bottle to the inhaler. The face piece is of rubber, fit closely over the nose; and mouth, in the handle (a tube of hard rubber) is a stop-cock, so that the inhalation may be stopped instantly. When the air bag has been filled, the supply from the cylinder is shut off, and the inhalation begun; as the bag becomes empty, a turning of the wheel will again fill it. This can be continued so long as necessary. The patient breathes naturally, and the narcosis is relieved of much of its dangers. While this method of inducing anæsthesia is in its infancy, there are great possibilities in store for it in the near future. *Virginia Med. Monthly.*

Communicated.

ILLINOIS STATE DENTAL SOCIETY.

The thirty-second annual meeting of the Illinois State Dental Society will be held in the Senate Chamber, Springfield, Ill., May 12 to 15, 1896. The executive committee has been especially fortunate in preparing a very interesting programme. No member can afford to be absent. Dentists practicing in the State are cordially invited to attend and if possible to become members of the Society. The profession outside of the state is always welcome at these meetings. The hotels and railroads have granted the usual reduction. Pay full fare in coming and take receipt therefor, this when countersigned by the Secretary, entitles the holder to return at one-third the usual fare.

LOUIS OTTOFY, Secretary,
Masonic Temple, Chicago.

Editorial, Etc.

PROPOSED MARYLAND DENTAL LAW.

A BILL entitled "An Act to repeal Article thirty-two of the Code of General Laws, entitled 'Dentistry, and to re-enact said article, with amendments."

SECTION 1. Be it enacted by the General Assembly of Maryland, that Article thirty-two of the Code of Public General Laws, entitled "Dentistry," be, and the same is hereby, repealed and re-enacted, so as to read as follows :

SEC. 2. It shall be unlawful for any person to practice dentistry in this State unless such person shall have obtained a certificate, as hereinafter provided.

SEC. 3. There shall be a State Board of Dental Examiners, which shall consist of six practicing dentists of recognized ability and honor, who have held regular diplomas for five years, whose duty it shall be to carry out the purposes and enforce the provisions of this Act. The members of said board shall be appointed by the Governor out of a list of nine dentists proposed by the Maryland State Dental Association, and chosen by a majority vote of the members of said association present at a meeting called for that purpose, of which meeting two weeks' notice shall be given. The term for which the members of said board shall hold their office shall be for six years, except that the members of said board first to be appointed under this Act shall be designated by the Governor to serve: One-third for a term of two years, one-third for a term of four years, and one-third for a term of six years, unless sooner removed by the Governor, and until their successors shall be duly appointed. In case of a vacancy occurring in said board, such vacancy shall be filled by the Governor from the list above mentioned. Any member of said board who shall be absent from two successive regular board meetings shall cease to be a member of it.

SEC. 4. Said board shall choose one of its members president and one secretary thereof, and shall hold regular meetings in May and November of every year, and special meetings, as occasion may require. A majority of said board shall at all times constitute a quorum, but a less number may adjourn from time to time; the proceeding thereof shall at all reasonable times be open to public inspection. The board shall make a report of its proceedings to the Governor by the first day of December in each year.

SEC. 5. Any person twenty-one years of age, who has graduated at, and holds a diploma from, a university or college authorized to grant diplomas in dental surgery by the laws of any one of the United States, and who is desirous of practicing dentistry in this State, may be examined by said board with reference to qualifications, and, upon passing an examination satisfactory to said board, his or her name, residence or place of business, shall be registered in a book kept for that purpose, and a certificate shall be issued to each person. Any graduate of a regular college of dentistry may, at the discretion of the examining board, be registered without being subjected to an examination.

SEC. 6. All certificates issued by said board shall be signed by its officers and bear its seal.

SEC. 7. A temporary certificate for a specified time may be issued by the officers of said board to any applicant holding a regular dental diploma duly registered by a board of dental examiners created by the laws of any one of the United States, but no such certificate shall be issued for any longer time than until the next regular meeting of the board. The fee for this temporary certificate shall be five dollars.

SEC. 8. Transcripts from the aforesaid book of registration, certified by the officer who has the same in keeping, with the seal of said board of examiners, shall be evidence in any court of this State.

SEC. 9. A fee of ten dollars shall be paid to the secretary of the board by any applicant for registration, which money shall be used towards paying the expenses of the board.

SEC. 10. Every person shall be said to be practicing dentistry within the meaning of this Act, who shall, for a fee, salary, or other compensation, paid either to himself or to some one else for services rendered, perform operations or parts of operations of any kind pertaining to the mouth, treat diseases or lesions of the human teeth or jaws, or correct mal-positions thereof.

SEC. 11. It shall be unlawful for any person not holding a regular diploma to assume the academic title of "doctor."

SEC. 12. Any person who shall violate any of the provisions of this Article shall be deemed guilty of a misdemeanor, and, upon conviction thereof, in any court having criminal jurisdiction, shall be fined not less than fifty dollars nor more than three hundred dollars, or be confined not more than six months in the county jail, or if the conviction takes place in Baltimore city in the Baltimore city jail, in the discretion of the court. All fines received under this Act shall be paid into the common school fund of the city or county in which such conviction takes place.

SEC. 13. Nothing in this Article shall be so construed as to interfere with the rights and privileges of resident physicians and surgeons, and dental students operating under the immediate supervisions of their instructors in dental infirmaries of dental schools chartered by the General Assembly of Maryland.

SEC. 14. And be it enacted, that nothing in this Act shall prevent, or be so construed, as in any way to hinder the prosecution or punishment of any person who may have offended against any of the provisions of said Article thirty-two of the Code of Public General Laws, or against any of the provisions of any of the Acts of Assembly of which the same was a codification.

SEC. 15. And be it enacted, That this Act shall take effect from the date of its passage.

Monthly Summary.

BICYCLING FOR WOMEN.—A local preacher who enjoys some notoriety as a sensationalist and a *poseur* has taken it upon himself, with all the callow rhetoric of a country schoolmaster, to denounce the bicycle as a most diabolical invention, especially designed and executed for the subversion of the morals of women. In the face of such anathemas hurled from the very horns of the alter, she must be a brave woman indeed who would continue in the error of her way.

If the fervid eloquence of the very reverend doctor had been tempered with cold facts, the way of the gentle transgressor would not have seemed so hard. These facts, so conspicuously absent in the clerical denunciation of the bicycle, are well set forth in our ever dignified and reliable contemporary, the Chicago *Medical Standard*, and apply both to the male and female offenders. In a recent editorial on this subject it says: "A very severe indictment can be brought against bicycle abuse, but these abuses are common to a hundred methods of outdoor exercise. There is no necessary emotional excitement about cycling. Despite its widespread use, racing is rarer with the wheel than with the horse. 'Scorching' has been largely, if not entirely, responsible for all evils charged to the wheel. Wheel kyphosis is a result of bad position and, as women cyclers have shown, avoidable. A very calm, judicial critic, Dr. Justus Champoniere, declares that for grace and regularity of motion woman is man's superior in the use of the bicycle. She cycles as well as she dances.

"To the sedentary clerk the wheel has brought fresh air and exercise previously impossible from the cost of horses. By hygienic dress the wheel has benefitted woman to an extent which far outweighs any possible evils resultant on its use. It has doomed the corset and waist-attached skirts, the source of unlimited pelvic evils The ease and freedom with which outdoor exercise is obtained has tempted into the sunshine women with moping tendencies to invalidism. To none is it likely to prove a greater boon than to the farmer woman. Among these, because of isolation, nervous disease and insanity are rife. Decades ago Dr. Patterson, who had studied insanity in Iowa, Ohio, Indiana and Illinois farming regions, remarked: 'The wives and daughters of farmers during inclement seasons have fewer comforts connected with outdoor life and less adequate protection from cold and humid air than the women who live in our towns and cities.' It is probable, taking prairie farm life with all its surroundings, that the average standard of vital force in those who live upon farms is below that of those who live in cities and towns. It must not be inferred, however, from these suggestions that the noble and pleasing pursuits of agriculture favor the production of insanity. The errors of living and the discomforts alluded to are not necessarily connected with, and certainly not limited to farm life. Precedent to insanity always occur malaise and auto-intoxication, with resultant hepatic, renal and gastro intestinal disorders and consequent cardiac stress. Much of the so-called dyspepsia of farmers is gastro-neurasthenia. Open-air exercise (not athletics) and visiting, which the bicycle can secure, break up the dead routine underlying invalidism. Bicycling, like all exercise, has its dangers, but it has become of such practical use that there are less proportionately than those of other modes. To point out abuses, is to prevent them."

The most important objection to bloomers is their unsightliness. No woman can afford to make herself ridiculous, and with the use of bloomers, they come perilously near it. There can be no doubt but that this garb is merely transitional, and is designed as a compromise measure before the introduction of the more sensible knickerbockers.

Mens sana in corpore sano. Let the women ride.—*Southern Medical Rrcord.*

MEDICAL AND DENTAL STATE BOARDS.—The present Medical Board of Health of Missouri has recently showed commendable activity in the supervision of requirements for admission of students to colleges whose diplomas are to be accepted and registered. In the matter of preliminary requirements for freshmen, the following is one of the rules: "The candidate must have a diploma of graduation from a good literary or scientific college or high school, or a first-class teachers' certificate." In carrying out the aforesaid requirement, colleges were required to furnish the board with the names, addresses and qualifications of those admitted according to the rules. One prominent college in the State refused to obey, and claimed the rule to be arbitrary. It was accordingly boycotted by the board, and then the trouble began. The boycotted college tried to prejudice the public through the daily press, with more or less success. The board, however, "stood pat," and the result is that the college has swung into line with the board's requirements, and the boycott is removed. This result leads us to speak of the benefit resulting from a State board, where there exists a law regulating the practice of medicine or dentistry. In Missouri the enforcement of the dental law—in the absence of a board for that purpose—has been accomplished by the Missouri State Dental Association through its law committee, and, so far as the power of that committee extended, the work has been very well done, and the proffession is indebted to Dr. Jas. A. Price, the committeeman. So long, however, as the power of registration to practice dentistry in the State belongs to the county clerk, he cannot always discriminate as to the "reputability" of diplomas. Under the laws of Missouri, a charter for a dental college can be secured for a small fee by any five men, and, be their standing in dentistry ever so indifferent, their diplomas may often be credited and registered by the county clerk for the only reason that the institution holds a charter from the Missouri Assembly, and the county clerk has, in many instances, no means of knowing whether the school issuing the diploma is reputable or not. Under the circumstances, the profession in Missouri should ask the Legislature to amend the dental practice act, providing for a board whose duty it shall be to pass upon candidates for registration, and to look after the enforcement of the law, punish violators, etc.

Until recently we have believed it to be the part of wisdom to allow the law to remain as it stands, but so long as Tom, Dick and Harry can secure a charter, and county clerks are prone to consider anything chartered legitimate, it is time that the respectable men in dentistry in Missouri insist upon an examining board. It is, we believe, the one thing that should be done by the profession in Missouri during the coming year The enforcement of the law must no longer be left to private efforts, but must be done by properly constituted State authority. The recent success of the Medical Board of Health should encourage the belief that a dental board will also be granted by the Legislature, and that the public will appreciate its legitimate work.—Editorial in *Western Dental Journal.*

HEMORRHAGE.—Otto Arnold, D. D. S., of Columbus, Ohio, in a paper entitled "Alveolar Dental Hemorrhages," read before the Tri-State dental meeting, says:

My universal method of procedure in the management of hemorrhage following tooth extraction, is to have the patient rinse the mouth freely with hot water. This encourages free and uninterrupted bleeding from the wound, and stimulates a normal reaction in the tissues, soon followed by a natural cessation of the hemorrhage.

If any considerable amount of laceration has taken place, I attempt to replace the tissues by compressing with the fingers, or stitching into position any pendant of the gum. prescribing as a dressing:

R	Tannic acid, - - - -	gr. xx.
	Listerine. - - - -	
	Aqua Dest. *aa*, - - - - -	℥ iv.

M. Sig.—Apply frequently to the wound.

HYPNOTISM IN SURGERY.—Fifty years ago Dr. L. A. Dugas, of Georgia, operated three times upon a woman in the hypnotic state for recurring carcinomena of the breast. In the third operation the axillary glands were also removed. The patient gave no indication whatever of sensibility (*Southern Medical and Surgical Journal*, March, May and September, 1845). Dr. Dugas believed that the phenomena of "mesmeric sleep" might be so utilized as to "render them available to all sufferers." A little earlier Dr. Crawford W. Long, the discoverer of anesthesia, had investigated the subject and disused hypnotism because of its uncertainty of action Hypnotism has thrice been revived and twice fallen into disuse during the last century.—*Medical Standard.*

NEW METHOD OF GENERAL NARCOSIS.—Rosenberg, in the Berlin Medical Society (Deutsche medicinische Wochenschrift, No. 50, 1894), describes a new method for including general narcosis. Before commencing the anesthetic, the patient's nasal mucous membrane is to be sprayed with a ten per cent. solution of cocaine. During prolonged anesthesia, the spraying is to be repeated every thirty minutes, and again at the end of the operation, no matter how short. His conclusions are. (1) excluding cases of negligence and of poisoning, cardiac syncope in chloroform narcosis is, in so far as it can be attributed to the chloroform, reflex. (2) The syncope and the accompanying respiratory embarrassment are due to irritation of the peripheral trigeminal filaments in the nasal mucous membrane. (3) Every anesthetic inhaled produces the same reflex symptoms as chloroform. (4) By proper cocainization of the nasal mucous membrane, all such reflexes can be positively prevented. (5) Thus a greater part of the dangers of inhalation anesthesia, particularly of chloroform, can be removed. (6) Chloroform possesses a certain action antidotal or antitoxic to chloroform, and thus further reduces the dangers of chloroform. (7) Chloroform in such cases is to be preferred to ether, as being less dangerous. The chloroform must always be administered drop by drop.—"Universal Medical Magazine."

AIR-CHAMBERS.—If the always successful insertion of full upper plates in all materials, rubber, gold, aluminum, continuous, gum, without air-chambers, lines made in the plaster cast, or other devices, does not demonstrate their usefulness, what further evidence is needed?

As a rule, it is rarely ever necessary to make any other change in the plaster model than a slight relief over the hard palate, so the plate shall not rock, as that is the only portion of the upper jaw which never changes nor yields to pressure. The plate will adhere just as well without this "relief."

I have on my shelves hundreds of models of every conceivable shape and condition of jaws, upon which metal plates have thus been made successfully.—L. P. Haskell in *Dental Cosmos.*

"Doc."—If it has been your misfortune to be called "doc" and if this recognition has become at all general among your friends you might as well move to some other place. A man may be called a thief, a liar and a dead beat, and yet he may prosper and live upon the fat of the land. But once let him be called "doc" and his professional success is at an end. We would prefer to spend a night in the station-house, so far as its effect on our professional success is concerned rather than to have our friends notice our approach by saying, "There comes doc." If a man calls you "doc" you need never expect a penny from him for any professional service you could render. His answer is sure to be, "All right, doc, in a few days that will be all right. "Doc" means disaster. "Doc" is the culmination of all calamity. "Doc" is a catastrophe given at one stroke. "Doc" is the warning that we have reached the extreme limit of our usefulness. "Doc" is the hand which points us to the next town. Shun it, my young friend, as you would flee from a Kansas cyclone or a praririe-fire. Knock the man down who dares to speak it to you; and call upon the whole medical profession for vindication of your righteous deed.—*The National Medical Review.*

AS AN OBTUNDANT.—Dr. F. F. Van Woert, of Brooklyn, uses a 50 per cent. solution of sulphuric acid as an obtundant for sensitive dentine. He discovered it by accident, while endeavoring to open the pulp canals of a devitalized tooth with the acid solution. The rubber dam was over the dead tooth, and also over a carious bicuspid which stood next it. In some way the solution got into the cavity of the living tooth, which he had in vain been striving to excavate. To his surprise, he found that the tooth which had been agonizingly sensitive, was now completely obtunded. Since that time he has been using it with very gratifying results, although not in every case with complete success. Usually, however, it enables him to excavate painlessly. He uses but little at a time, and as the affinity is soon satisfied it becomes self-limiting and will do no harm. If too much is used, it can be readily neutralized with a solution of soda bicarbonate.—"Dental Pract. and Advertiser.

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